Town of Perth Municipal Transportation Master Plan

Prepared for:
Town of Perth, Ontario

Prepared by:
Stantec Consulting Ltd.

April 4, 2017

Sign Off Sheet

This document entitled Town of Perth Municipal Transportation Master Plan was prepared by Stantec Consulting Ltd. ("Stantec") for the account of The Town of Perth (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 

(signature)

Brandon Orr, BES, MCIP, RPP

Reviewed by 

(signature)

François Tomeo, P.Eng

Table of Contents

EXECUTIVE SUMMARY ..... **I**

1.0 INTRODUCTION **1.1**
1.1 STUDY PURPOSE 1.1
1.2 VISION, GOALS AND OBJECTIVES 1.1

2.0 TRANSPORTATION PLAN **2.1**
2.1 MASTER PLANS AND THE MUNICIPAL CLASS EA PROCESS 2.1
2.2 FORECASTING APPROACH AND METHODOLOGY 2.1
2.3 ACTIVE TRANSPORTATION NETWORK DEVELOPMENT 2.2

3.0 POLICY CONTEXT **3.1**
3.1 PROVINCE OF ONTARIO 3.1
3.1.1 Provincial Policy Statement (PPS, 2014) 3.1
3.1.2 MTO Highway 7 Study 3.1
3.1.3 Ontario Trails Strategy (2010) 3.1
3.2 LANARK COUNTY 3.2
3.2.1 Lanark County Sustainable Communities Official Plan (2012) 3.2
3.2.2 Lanark County Vision 2025 ..... 3.2
3.2.3 Lanark County Transportation Master Plan (2010) 3.2
3.2.4 Lanark County Traffic Calming and Speed Management Policy (2009) 3.3
3.2.5 Lanark County Cycling Plan (2009) 3.3
3.3 TOWN OF PERTH 3.4
3.3.1 Town of Perth Official Plan (2015) 3.4
3.3.2 Town of Perth Strategic Plan 2022 (May 2015) 3.5
3.3.3 Town of Perth Transportation Master Plan (1991) 3.6
3.3.4 Town of Perth Secondary Plan (2006) 3.6
3.3.5 Tay River Trail Conceptual Master Plan 3.7
3.3.6 Town of Perth Arterial Roadway Municipal Class Environmental Assessment (EA) Study (2006) 3.7
3.3.7 Heritage Perth Economic Development Strategic Plan (2013-2018) 3.7
3.3.8 Downtown Perth Community Improvement Plan (2011) 3.8
3.3.9 Tay River Trail Conceptual Master Plan (2005) 3.8
3.3.10 Town of Perth Committee of the Whole Report 2015-COW-8.6: Dufferin Street Sidewalk Placement 3.8
3.3.11 Town of Perth Multi-Year Accessibility Plan 2013-2014 ..... 3.8

4.0 TOWN OF PERTH TODAY **4.1**
4.1 LAND USE 4.1
4.2 TRANSPORTATION INFRASTRUCTURE 4.1
4.2.1 Road Classification 4.1

4.2.2 Corridor Exchange 4.4
4.2.3 Signalized Intersections 4.4
4.2.4 Downtown Parking 4.6
4.2.5 Active Transportation 4.7
4.3 TRAFFIC OPERATIONS 4.10
4.3.1 Turning Movement Counts 4.10
4.3.2 Automatic Traffic Recorder Counts 4.14
4.3.3 LOS Analysis 4.16
4.3.4 Traffic Signal Coordination 4.22
4.3.5 Truck Activity 4.25
4.4 SAFETY REVIEW 4.26
4.4.1 Collision History 4.26
4.4.2 Vehicle Speeds 4.28
4.4.3 Rail Crossing 4.28
4.4.4 Schools 4.30
4.4.5 Courtesy Crosswalks 4.32
4.5 ACTIVE TRANSPORTATION 4.33
4.5.1 Overview 4.33
4.5.2 Problems and Opportunities 4.34
4.6 PARKING 4.35
4.6.1 Downtown Parking 4.35
4.7 CONCLUSIONS, PROBLEMS, AND OPPORTUNITIES 4.40

5.0 TRAFFIC FORECAST 5.1
5.1 FUTURE DEVELOPABLE AREAS 5.1
5.2 TRIP GENERATION 5.3
5.3 TRIP DISTRIBUTION AND ASSIGNMENT 5.3
5.4 TRAFFIC ANALYSIS 5.6
5.5 CONCLUSIONS 5.11
5.6 PROBLEM AND OPPORTUNITY STATEMENT 5.12

6.0 COMMUNITY ENGAGEMENT 6.1
6.1 PUBLIC OPEN HOUSE #1 ..... 6.1
6.2 ONLINE SURVEY 6.2
6.3 PUBLIC OPEN HOUSE #2 ..... 6.2

7.0 OPERATIONAL ALTERNATIVES AND RECOMMENDATIONS 7.1
7.1 TRAFFIC OPERATIONS 7.1
7.1.1 Truck Routes 7.1
7.1.2 Future Needs 7.6
7.1.3 Intersection Operation Optimization 7.15
7.2 SAFETY 7.20
7.2.1 Pedestrian Crosswalks 7.20
7.2.2 Elevated Accident Intersections 7.27
7.2.3 Speed Limits 7.28

7.2.4 One-way Street Evaluation 7.31
7.3 MULTI-MODAL ROUTES 7.34
7.4 PARKING 7.38
7.4.1 Downtown Parking 7.38
7.4.2 On-Street Parking 7.39
7.5 SUMMARY OF RECOMMENDATIONS 7.41
7.5.1 Short-Term 7.41
7.5.2 Medium to Long-Term 7.43

8.0 POLICY RECOMMENDATIONS 8.1
8.1 UPDATES TO THE TOWN OF PERTH OFFICIAL PLAN 8.1
8.2 ACTIVE TRANSPORTATION 8.2
8.2.1 Transportation Demand Management 8.2
8.2.2 Sidewalk Strategic Plan 8.2
8.2.3 Accessibility for Ontarians with Disabilities Act (AODA) 8.3
8.3 OVERSIZE/OVERWEIGHT LOADS 8.3
8.4 SAFETY 8.6
8.4.1 Speed Limits 8.6
8.4.2 Community Safety Zones 8.7
8.5 ENTRANCE PERMITS 8.9
8.6 PARKING DEFINITION 8.10
8.7 RECREATIONAL VEHICLES 8.11
8.8 SUMMARY OF RECOMMENDATIONS 8.12

9.0 IMPLEMENTATION AND MONITORING 9.1
9.1 CAPITAL PROGRAMMING 9.1
9.1.1 Funding Options for Active Transportation Improvements 9.6

10.0 CONCLUSION AND RECOMMENDATION 10.1
10.1 SHORT TERM RECOMMENDATIONS 10.1
10.2 MEDIUM TO LONG TERM RECOMMENDATIONS 10.2

11.0 REFERENCES 11.1

LIST OF FIGURES

FIGURE 1 - ROAD CLASSIFICATION 4.5
FIGURE 2 - EXISTING CYCLING NETWORK 4.9
FIGURE 3 - DATA COLLECTION LOCATIONS 4.13
FIGURE 4 - GORE STREET WEEKDAY TRAFFIC PROFILE 4.14
FIGURE 5 - GORE STREET WEEKEND TRAFFIC PROFILE 4.15
FIGURE 6 - AM PEAK PERIOD, NORTHBOUND 4.22
FIGURE 7 - AM PEAK PERIOD, SOUTHBOUND 4.23
FIGURE 8 - PM PEAK PERIOD, NORTHBOUND 4.24
FIGURE 9 - PM PEAK PERIOD, SOUTHBOUND 4.25
FIGURE 10 - EXISTING PARKING UTILIZATION 4.38
FIGURE 11 - OFF-STREET PARKING COVERAGE 4.39
FIGURE 12 - FUTURE DEVELOPABLE AREAS 5.2
FIGURE 13 - FUTURE TRAFFIC CONDITIONS IN 2041 WITH THE NEW ARTERIAL ROAD 5.10
FIGURE 14 - RECOMMENDED TRUCK ROUTES, SIGNAGE & WAYFINDING 7.4
FIGURE 15 - TRUCK SWEPT PATHS WITH RECOMMENDED IMPROVEMENTS AT NORTH /WILSON 7.5
FIGURE 16 - FUTURE TRAFFIC CONDITIONS IN 2041 WITHOUT THE NEW ARTERIAL ROAD 7.9
FIGURE 17 - PROPOSED SOUTH STREET BRIDGE ALIGNMENT OPTIONS 7.12
FIGURE 18 - FUTURE TRAFFIC CONDITIONS IN 2041 WITH THE SOUTH STREET BRIDGE AND NO NEW ARTERIAL ROAD 7.13
FIGURE 19 - EXISTING CROSSWALKS AT HERRIOT AND GORE STREETS 7.20
FIGURE 20 - HERRIOT ST CROSSWALK PEDESTRIAN MOVEMENTS, SATURDAY, AUGUST 23, 2014 ..... 7.21
FIGURE 21 - MARKET SQUARE CROSSWALK PEDESTRIAN MOVEMENTS, SATURDAY, AUGUST 23, 2014 . 7.22
FIGURE 22 - PEDESTRIAN CROSSING VOLUMES, DOWNTOWN PERTH 7.23
FIGURE 23 - RECOMMENDED ENHANCED CROSSWALK LOCATIONS 7.25
FIGURE 24 - ENHANCED CROSSWALK SIGNAGE 7.25
FIGURE 25 - RECOMMENDED TRAFFIC CALMING AREAS 7.30
FIGURE 26 - RECOMMENDED IMPROVEMENTS FOR THE WILSON/HERRIOT STREET CURVE 7.34
FIGURE 27 - EXAMPLE OF AN EXISTING TRAIL IN PERTH 7.35
FIGURE 28 - RECOMMENDED CYCLING NETWORK 7.36
FIGURE 29 - RECOMMENDED PEDESTRIAN PRIORITY NETWORK 7.37
FIGURE 30 - RECOMMENDED HIGHLY VISIBLE PARKING SIGN WITH DIRECTION TAB 7.39
FIGURE 31 - RECOMMENDED "NO-PARKING" ZONE AT ISABELLA/GARDEN 7.40
FIGURE 32: SHORT-TERM RECOMMENDATIONS 7.45
FIGURE 33: MEDIUM TO LONG-TERM RECOMMENDATIONS 7.46

LIST OF TABLES

TABLE 1 - EXISTING SIGNALIZED INTERSECTIONS....4.4
TABLE 2 - DOWNTOWN PARKING INVENTORY....4.6
TABLE 3 - ACTIVE TRANSPORTATION FACILITY INVENTORY....4.7
TABLE 4 - TWO-WAY PM PEAK HOUR TRAFFIC VOLUME GROWTH....4.11
TABLE 5 - AVERAGE DAILY TRAFFIC VOLUMES....4.16
TABLE 6 - LEVEL OF SERVICE CRITERIA - SIGNALIZED INTERSECTIONS....4.17
TABLE 7 - LEVEL OF SERVICE CRITERIA - UNSIGNALIZED INTERSECTIONS....4.17
TABLE 8 - PEAK HOUR LEVEL OF SERVICE ANALYSIS....4.19
TABLE 9 - NUMBER OF REPORTED COLLISIONS....4.26
TABLE 10 - VEHICLE SPEEDS....4.28
TABLE 11 - WILSON STREET AT-GRADE RAIL CROSSING TRAINS....4.29
TABLE 12 - PARKING OCCUPANCY....4.36
TABLE 13 - ON-STREET PARKING DURATION....4.36
TABLE 14 - TRIP GENERATION....5.3
TABLE 15 - TRIP DISTRIBUTION....5.4
TABLE 16 - FUTURE TRAFFIC CONDITIONS 2041 - VOLUME GROWTH ANALYSIS....5.5
TABLE 17 - FUTURE TRAFFIC CONDITIONS 2041 - PEAK HOUR LEVEL OF SERVICE ANALYSIS....5.7
TABLE 18 - PROPOSED TRUCK SIGNAGE & WAYFINDING LOCATIONS....7.2
TABLE 19 - VOLUME AND LOS COMPARISON FUTURE CONDITIONS WITH AND WITHOUT NAR....7.7
TABLE 20 - VOLUME AND LOS COMPARISON CRAIG ST BRIDGE VS SOUTH ST BRIDGE....7.11
TABLE 21 – MINIMUM VOLUME ALL-WAY STOP CONTROL WARRANT....7.17
TABLE 22 - VOLUME SPLITS MAJOR/MINOR ROADS....7.17
TABLE 23 - ALL-WAY STOP CONTROL WARRANT....7.18
TABLE 24 – VOLUME AND LOS COMPARISON TRAFFIC SIGNAL RELOCATION....7.19
TABLE 25 - PEDESTRIAN CROSSWALK ALTERNATIVE OPTIONS EVALUATION....7.24
TABLE 26 - VEHICLE SPEEDS....7.28
TABLE 27 – VOLUME AND LOS COMPARISON NORTHBOUND ONE-WAY STREET....7.31
TABLE 28 – VOLUME AND LOS COMPARISON SOUTHBOUND ONE-WAY STREET....7.32
TABLE 29 - SHORT-TERM OPERATIONAL RECOMMENDATIONS....7.41
TABLE 30 - MEDIUM TO LONG-TERM OPERATIONAL RECOMMENDATIONS....7.43
TABLE 31 - POLICY RECOMMENDATIONS....8.12
TABLE 32 - COST OF RECOMMENDED STRATEGY BY TIMING AND DEVELOPMENT CHARGES....9.1
TABLE 33 - COST OF RECOMMENDED IMPROVEMENTS BY GROUPING....9.2
TABLE 34 - CAPITAL FUNDING COSTS AND TIMEFRAMES....9.3
TABLE 35 - RECOMMENDED SHORT-TERM IMPROVEMENTS....10.1
TABLE 36 - RECOMMENDED MEDIUM-TO-LONG-TERM IMPROVEMENTS....10.2

LIST OF APPENDICES

Refer to the Appendix Report

EXECUTIVE SUMMARY

At the centre of a Town's resilience, viability and quality of life is its transportation network. It is these transportation facilities and pieces of infrastructure that not only enhance the movement of goods and services, but also people. Moving people around urban areas has gone hand-in-hand with the evolution of the urban form. It is an enabler to growth and a catalyst for the development of cultural and social amenities.

Existing Conditions

Perth exemplifies the typical Ontario Town. Bustling with a vibrant urban core, with much of it's employment and growth focused on the outlaying areas of the municipality. Between 1986 and 2011, population grew by 33% to reach 5,840 people. While population has been growing in the Perth area, this growth has been occurring outside of the Town, whereas employment has been increasing within the Town. This has resulted in an unusual imbalance between population and employment. Only half the jobs in Perth are filled by Perth residents; the rest are filled by commuters from the surrounding communities, particularly to the east and south. Much of this growth is being accommodated by the major thoroughfares that crisscross the community connecting to other municipalities such as Highway 7, Country Road 43, Rideau Ferry Road, and Scotch Line (more details in **Section 1.0** of the report).

There is sufficient parking supply for the observed typical summer weekday and Saturday parking demands within the Business Improvement Area (BIA) overall with the highest peak occupancy observed being 73% utilization (see **Table 12** of study report). Vehicles parked on-street are typically parked for one hour or less, which is consistent with the current regulations (2-hour limit) and a desirable level of turnover for a downtown commercial area is realized.

The existing transportation network operates at acceptable levels of service and well within capacity with a few exceptions:

- Some trucks continue to use Gore Street and Foster Street rather than the alternative signed routes that are available. The intersection of North Street and Wilson Street is challenging for trucks to navigate despite being it being part of an identified truck route.
- The intersections of Drummond St at Craig St, Gore St at North St, and North St at Wilson St do not appear to have abnormally higher collision rates, although observations at the intersections confirm poor sightlines and other conditions that diminish the perception of safety.
- Three locations were found to have an average speed greater than 15% above posted maximum speeds. The first two of these, Craig Street/CR 43 between Provost Street and Irwin Street and Sunset Boulevard between Mather Street and George Avenue, are found to be in a speed transition area from rural to urban settings. The third location, Rogers Road between South Street/CR 10 and Cockburn Street/Smith Drive, is on a stretch of urban road with few midblock accesses.

- The at-grade rail crossings within the Town experience 12-13 trains per day with average blockage duration of 2 minutes. Due to the length of trains, there is the potential for a stopped train to block multiple at-grade crossings in the Town simultaneously, which results in isolating residents and emergency services on their respective sides of the rail line and requiring a lengthy detour.
- The pedestrian courtesy crossings on Gore Street within the BIA are well used and are generally functioning as intended, although there is a general confusion regarding who has the legal right-of-way at these crosswalks.
- There are few active transportation facilities and connections.

Future Conditions

The Town of Perth is expecting growth in population (+4,640) and employment (+4,542) up until the horizon year of 2041. Much of the population growth will be accommodated by an increase in households (+2,066) focused on infill and intensification in existing developed areas and four new development areas:

- Perthmore Glen subdivision (400 residential units);
- Lands North of Highway 7 (615 residential units and 122,000 m^2 gross floor area of retail, business park, and institutional land uses);
- Golf Club lands (650 residential units); and
- Tayview lands (180 residential units).

The forecasted traffic impacts of these developments is expected to be over 2,500 trips in the morning peak period and over 4,700 trips in the afternoon peak period. It is expected that the bulk of traffic will be distributed along Highway 7, North St, Craig St, Sunset Boulevard, Scotch Line, and Rideau Ferry Road.

Traffic analysis identified the following conclusions based on modelling the transportation network with the planned MTO improvements along Highway 7 and the New Arterial Road on the east end of town between Highway 7 and County Road 43:

- The assumed growth for 2041 equals to about 1,850 residential units and 122,000 m2 gross floor area of retail, business park, and institutional land uses. Therefore, the expected increase in traffic of over 2,500 new trips added to the transportation network in the A.M. Peak hours and over 4,700 new trips added in the P.M. Peak. The most significant increases in traffic during peak hours are expected to be centered around the corridors of Highway 7 (±100%), Wilson Street (±50%) and the Craig/New Arterial Road combination (±50%).
- A.M. peak hour show issues at the following intersection:
  - North Street/ Wilson Street;
- P.M. peak hour analysis shows issues at the following intersections:
  - Highway 7/Wilson Street;
  - Sunset Boulevard-Harris Street/ Wilson Street;

- North Street/ Wilson Street;
- Herriott Street/ Gore Street;
- Craig Street/ New Arterial Road;
- South Street/ Rideau Ferry Road-Gore Street.

Most future operational concerns are focused along the Highway 7 and Wilson Street Corridors. The New Arterial Road, North Street and Craig Street combination will help shift some of the traffic off those corridors. Intersections along the New Arterial Road, North Street and Craig Street are shown to operate at acceptable levels of service well within their capacity. It should be reiterated that the future traffic forecasts were quite conservative (i.e., erring on the high side), and the unknown build-out years for the considered development areas.

Recommendations

Perth is at an important juncture in its evolution; one that requires considerable changes to the way transportation is provided in the community; one that requires leaving behind the status quo of giving priority to the private automobile everywhere. A set of recommendations have been developed for the town comprising a mixture of short-term (<5 years), medium-term (5-10 years) and long-term (>10 years) improvements to achieve the Transportation Vision for the Town of Perth. These include:

- Provide and improve transportation infrastructure;
- Improve transportation system safety;
- Create a vibrant town centre;
- Support and encourage walking and cycling for residents and visitors;
- Minimize impacts on the natural environment.

The recommended improvements (see **Figures 32 and 33** for details) broken down by timeframe and group are the following:

- Short Term horizon (<5 years):
  - Replacement of courtesy crosswalks with enhanced crosswalks;
  - Implementation of safety features at:
    - Drummond St at Craig St;
    - Gore St at North St;
    - North St at Wilson St;
    - Wilson St/Herriott St curve;
    - Isabella St/Garden Ave curve.
  - Addition of safety features to address speeding at:
    - Craig/CR 43 between Provost and Irwin;
    - Sunset Blvd between Mather and George;
    - Rogers Rd between South/CR 10 and Cockburn/Smith;
    - Joy Ave between Glascott and Leslie.

  - Implementation of Community Safety Zones at:
    - Queen Elizabeth School;
    - St. Johns Elementary School.
  - Entrance Permits: New by-law to prevent roadway entrance being built onto municipal roadways without Town approval;
  - Truck route compliance signage & wayfinding;
  - Overweight/Oversize Load policy: Permit system to track and approve overweight/oversize loads using municipal roadways;
  - Signage & wayfinding to improve off-street parking utilization in the downtown BIA;
  - Improved parking management on streets near the paid parking areas in the downtown core.

- Medium-term (5-10 years):
  - Bike Lanes on various roadways;
  - Multi-Use trails along the rail path between Garden Ave and Wilson St, and between the Sewage treatment plant along the Tay River until Rogers Rd;
  - Pedestrian priority routes on various corridors.
  - Initial phases of new Arterial Road project.

- Long-term (>10 years):
  - Replacement of Craig St bridge with a new South St bridge;
  - Construction and completion of the new Arterial Road between Highway 7 and CR 43 in the east end of Town.

Certain transportation improvements will benefit current residents and would comprise the *non-growth* component of the Development Charges (non-DC). The improvements required to accommodate higher volumes of traffic and increased demand on the existing infrastructure directly attributable to new developments are eligible for funding through Development Charges (DC).

The combined cost of all these improvements will be $49,846,000 including 15% for engineering and a 30% contingency. Of that, $99,400 is needed for short-term improvements (<5 years), $9,000,700 for medium term (5-10 years), and $40,745,900 for long-term (>10 years). These recommendations have been developed together with the community and Town staff to provide the basis for a more flexible transportation network that embraces the multi-modal nature of transportation in the Town and caters not only to commuting and work-related trips, but discretionary, and recreational trips as well.

1.0 INTRODUCTION

1.1 STUDY PURPOSE

The Town of Perth has commissioned the development of this Transportation Master Plan (TMP) to build upon the 1991 Traffic Operations and Transportation Planning Study and the Official Plan completed in 2015. It is the Town's blueprint for planning, developing and operating its walking, cycling, and road networks over the next decade and beyond. It addresses operational design, planning and policy issues within the context of transportation and land use planning within the Town of Perth. The plan reflects the emergence of active transportation considerations as described in the Town's Official Plans, and includes a multi-modal approach to transportation recommendations. In accordance with Appendix 2 of the initial RFP, there were 28 specific items to be considered through the process and our findings regarding these issues are presented in this report.

1.2 VISION, GOALS AND OBJECTIVES

This TMP was developed regarding the community's Vision Statement which reads "To be a sustainable Community that respects both its Heritage and Natural Environment, while enabling a balanced lifestyle by means of a vibrant economy." The transportation vision for the Town of Perth is of a safe, sustainable, and multi-modal transportation system. This TMP provides policies, strategies, and recommendations to help the Town improve the safety of motor vehicle circulation and increase the use of active transportation modes while accommodating projected demands on the transportation system due to population growth to the year 2041.

This vision includes the concept of Complete Streets which are streets designed, built and maintained to accommodate the needs of all users including people of all ages and abilities who walk, ride bicycles, drive, and take transit. The Transportation Goals follow from and aim to achieve the Transportation Vision for the Town of Perth. These include:

- Provide and improve transportation infrastructure;
- Improve transportation system safety;
- Create a vibrant town centre;
- Support and encourage walking and cycling for residents and visitors;
- Minimize impacts on the natural environment.

Transportation plays a vital role in enabling communities to achieve objectives relating to sustainability, the economy, and quality of life. The transportation network has a large impact on the daily lives of residents, it's imperative that it plays a role in empowering the community's residents, visitors and businesses by delicately balancing a multi-modal approach to transportation that addresses all different types of needs and users. A strain on the transportation network has negative ripple effects in other areas of the community. Often, improving conditions for one user group may create unfavourable conditions for another. An example of this may be

increasing traffic speed limits to improve the throughput of a roadway. It may improve traffic flow, but it may diminish the safety of other modes of transportation such as cycling and walking. It is important to acknowledge the interdependencies of the community's environment and make recommendations that balance benefits between all users.

The Town of Perth outlined general requirements for the TMP including the following objectives:

- An assessment of the Town's transportation planning needs for the short term and long-term timeframes in the Provincial Highway, County of Lanark, Arterial, Collector, and Local street networks.
- Evaluate connectivity measures with the County of Lanark and the townships of Tay Valley (East) and Drummond North/Elmsley (West and South) road systems and the Rideau Trail (Ottawa to Kingston).
- Investigation and review of the multi-modal approach to transportation for the municipality in the areas of commuter, commercial, industrial, institutional, and recreational uses.

In addition to the general objectives, the Town has identified specific issues to be addressed in this report. In total there are 28 specific issues that were identified by the town to review and are distilled into the following:

- Road network review and optimization including the placement of existing signalized intersections and the inclusion of one-way streets. Inclusion of new development areas including the Perth Golf Course area, the Arterial Roadway, and the area north of Highway 7 specifically related to access, trigger points, movements, and bridge placement.
- Parking Evaluation of on-street, parking lots, and private parking areas:
    - Parking evaluation and optimization to identify limitations of current on-street and lot parking.
    - To make suggestions for additional parking opportunities and locations throughout the municipality with specific recognition of the BIA parking areas.
    - Determine if operational and physical parking deficiencies exist in the BIA.
- Truck Routing Evaluation:
    - Review lane configurations, intersections and traffic signal timing and coordination on Gore, North, Wilson, and Craig Streets.
    - Utilize the findings of the Perth Official Plan, as well as information from surrounding municipalities to assess the capacities of truck routes and recommend changes as necessary in the short and long-term.
    - Review the existing designated truck routes and assess and make recommendations concerning difficulties with trucks accessing the downtown area with respect to turning movements, signage, and signalization.

2.0 TRANSPORTATION PLAN

2.1 MASTER PLANS AND THE MUNICIPAL CLASS EA PROCESS

There are several components that go into developing a TMP, the general work-flow for developing the plan revolves around the Municipal Class EA process which is environmental assessment (EA) legislation that requires the Town to identify and mitigate the impacts of transportation construction projects on all aspects of the environment. All projects identified in the TMP are subject to various EA legislation and processes:

- Ontario Environmental Assessment Act, 1990;
- Municipal Engineers Association Municipal Class Environmental Assessment, October 2000 (Class EA) as amended in 2007, 2011 and 2013;
- Canadian Environmental Assessment Act, 2012 (CEAA).

Provincial legislation requires roadway modification projects to follow the Class EA process. All major road projects remain subject to a requirement to complete a Class EA or Individual EA if one has not yet been completed. However, any project involving federal land is subject to the requirements of the CEAA.

This TMP has followed the Municipal Class EA Master Plan process thereby fulfilling the requirements of Phases I and II of this EA process for roads, which includes the identification of problems and opportunities, and the selection of preferred solutions. This was done in consultation with the Town, relevant stakeholders and the public.

The TMP and its background technical reports will become supporting documents for future EA work. Projects that have not completed the EA process will require additional work including public and stakeholder consultation before design and construction can proceed.

2.2 FORECASTING APPROACH AND METHODOLOGY

Based on a review of the historical traffic growth it was concluded that many roadway sections within the Town have experienced little to no change in traffic volumes. Given the Town's size and location, additional traffic on municipal roadways would primarily be associated with new developments. Consequently, no background growth rate has been applied and changes to the existing traffic volumes are a result of the build-out of potential development areas and changes to the transportation network.

The development areas comprise the following:

- Perthmore Glen subdivision (400 residential units);
- Lands North of Highway 7 (615 residential units and 122,000 m^2 gross floor area of retail, business park, and institutional land uses);

- Golf Club lands (650 residential units); and
- Tayview lands (180 residential units).

As there is no yearly background traffic growth rate, and the uncertainty associated as to when these development areas would be built-out, a horizon year of 2041 has been assumed to provide a potential timeline for the implementation of transportation improvements. It is noted that due to sensitivity to local market conditions, these development areas could be built-out in the short-term (less than 5 years), or might remain dormant up to and beyond 2041.

The future projected traffic volumes are the combination of existing traffic volumes and full development site traffic. These forecast traffic volumes will be analyzed to determine any future road and intersection deficiencies.

2.3 ACTIVE TRANSPORTATION NETWORK DEVELOPMENT

Network Development Process

Walking and cycling priority networks were identified for the Town of Perth through a network development process. Existing and planned routes, policies and input from the Town and stakeholders were inventoried to establish possible route priorities. Candidate routes were identified based on a needs assessment, feedback from discussions with the public and stakeholders during the first public meeting, and through the application of a set of route selection principles. These routes were ground-proofed by field investigations and refined with input from the Town and stakeholders to provide a draft network. The draft network was presented to stakeholders and the public and refined based on the feedback received. Priorities were also established through the consultation and inventory process to build the implementation plan and finalize the network:

1. Inventory Existing / Planned Routes and Networks;
2. Apply Route Selection Principles and Feedback from Public;
3. Field investigation;
4. Identify Candidate Routes;
5. Feedback from Town and Stakeholders;
6. Refine network;
7. Identify General Facility Types;
8. Public Feedback;
9. Implementation Plan (prioritize);
10. Finalize Draft Networks.

Route Selection Principles

The following route selection principles were used to identify the candidate routes:

- **Visible**: active transportation routes should be a visible and recognizable part of the transportation system.
- **Connected and Direct**: Routes should connect to each other to create a cohesive network that aims to provide direct access to community destinations and to regional active transportation routes.
- **Equitable access**: Routes should be easy to access from all local residential neighbourhoods providing equitable access to the network for all community members.
- **Destination-Based**: Routes should focus on providing access to community destinations which include cultural and recreational destinations like community centres and parks, as well as practical destinations like commercial centres, retail strips, schools, libraries, employment areas, future transit and carpool locations.
- **Attractive**: Active transportation routes should be appealing to the user and provide an enjoyable travel experience by offering access to attractive locations such as heritage buildings, and other interesting architecture, unique neighbourhoods, rivers and other natural features, views and vistas.
- **Meeting Diverse Needs**: Different types of cyclists and different trip purposes require different kinds of routes. The network should include a variety of on-road and off-road routes that can serve these varying needs.
- **Safe and Comfortable**: Fear for personal safety is one of the most cited reasons for avoiding active transportation. Route selection must consider the amount of risk and level of comfort each route will provide. Reducing real and perceived risk is necessary to encourage use of the network.
- **Accessible**: All new and redeveloped sidewalks and multi-use trails must meet minimum accessibility standards for the design of public spaces as required by the AODA (Accessibility for Ontarians with Disabilities Act, 2005). Route selection must consider these minimum space requirements.
- **Context Sensitive**: Route selection should reflect the goals and vision of the community for local active transportation and tourism opportunities.
- **Amenities and End-of-Trip Facilities**: Amenities that support active transportation use such as bicycle parking or benches should be available along routes or routes should include the potential to develop these facilities.
- **Cost Efficient**: Route selection must consider the cost to implement and maintain proposed routes. These costs should be at an appropriate scale for the Town of Perth and would be phased in over time. Funding opportunities from prospective partners such as Lanark County, Provincial and Federal governments and the private sector should be investigated.

3.0 POLICY CONTEXT

This Transportation Master Plan was developed within the context of existing local, regional and provincial policies that tie into transportation within their respective focus areas. These policies span from more macro-level provincial policies that set out general policies regarding the movement of people and goods, towards more meso- and micro-level County and Municipal policies that focus on community vision, sustainability, as well as specific secondary plan areas or environmental assessments. All these policies have laid the framework for this Transportation Master Plan and recommendations have been made to align with them. These policies are detailed below:

3.1 PROVINCE OF ONTARIO

3.1.1 Provincial Policy Statement (PPS, 2014)

Transportation policies set out in the Provincial Policy Statement focus on the movement of people and goods through a safe and energy efficient transportation system. As such, the policy promotes multi-modal transportation, which includes transit and active transportation, and is supported through compact, mixed land uses and transportation demand management initiatives that minimize the length and amount of required motor vehicle trips.

3.1.2 MTO Highway 7 Study

MTO is considering improvements to Highway 7 through Perth which may include adding lanes, reconfiguring intersections, optimizing signal timing, and other improvements. The timeline for any potential improvements has not been determined at the time of this report.

3.1.3 Ontario Trails Strategy (2010)

The vision, goals and values of the Province's trail strategy recognize trails as key economic and tourism assets for Ontario communities that, in addition to their economic benefits, bring important health benefits and contribute to a high quality of life for Ontarians.

Coordination and strategic leadership is available to trail stakeholders through the Ontario Trails system framework that guides trail development, innovative funding models, and financial support opportunities through the Trillium Foundation.

3.2 LANARK COUNTY

3.2.1 Lanark County Sustainable Communities Official Plan (2012)

Lanark County Official Plan was developed in combination with an Integrated Community Sustainability Plan (ICSP). The intent of this decision was to develop a Plan with a regional focus that would also recognize and support the land use planning responsibilities of local municipalities within the Region. The ICSP recognizes a continuing growth in the popularity of Lanark County as a cycling destination and makes a connection between infrastructure improvements and growth in bicycle tourism. The Plan aims to make active transportation a priority in all town and villages in the County through supporting the development of local active transportation plans. Strategic Objectives of the OP include supporting the development of infrastructure that will provide for safe walking and cycling. (5.1), encouraging a decrease in the use of single occupancy motor vehicles (16.1), encouraging the development of a multi-modal transportation system (16.2), supporting efforts to increase opportunities for physical exercise for all residents (17.1), and designing roads to protect the safety of all users (18.2). The Lanark County Sustainable Communities Official Plan (LCOP) establishes population growth estimates for the Town of Perth at 6,767 (medium) or 7,615 (high) people by 2031.

3.2.2 Lanark County Vision 2025

The Lanark County Vision 2025 discusses themes that are important to the residents and community leaders of Lanark County, and how these themes may shape the future of the County. One of the main themes that was communicated was the “importance of balance” between the rural and small-town way of life, the cherished natural features, and the need for managed growth and economic development.

Vision 2025 was centered around seven “building blocks” which included: protect and enhance the natural environment; manage growth through good planning and effective government; invest in infrastructure to meet needs and keep pace with growth; strengthen and diversify the economy; protect, maintain, and enhance the rural and small-town character; maintain a high quality of life; and maintain high quality services.

3.2.3 Lanark County Transportation Master Plan (2010)

The Regional Transportation Master Plan provides three major transportation strategies for Lanark’s transportation system: Optimizing the Existing Transportation Network, Managing Transportation Demand and Expanding and Improving the Network.

Active transportation improvements are included in the methods to employ these strategies, particularly through promotion of cycling, accessibility improvements and traffic calming measures (Section 8). Specifically, The TMP seeks to provide a safer and more comfortable environment for cycling by developing a cycling plan, construction of paved shoulders on roads undergoing rehabilitation, restriping of urban roads to provide bike lanes and working with the

Lanark Trails corporation to find funding for recreational trails (Section 8). A County Cycling Plan was completed in 2009. Additionally, the TMP aims to create a safer and more comfortable environment for walking and cycling by recommending development of a regional traffic calming and speed management policy that will provide a process for identification and mitigation of these concerns (Section 6.1.2) and a policy to address accessibility barriers including recommended design guidelines for sidewalks, crosswalks, and intersections (Section 6.2.2).

3.2.4 Lanark County Traffic Calming and Speed Management Policy (2009)

The Lanark County Traffic Calming and Speed Management Policy was developed to allow for a standardized approach for addressing traffic concerns. The policy had been developed based on traffic calming policies in similar communities in Ontario and British Columbia. County staff work is anticipated to be made more efficient and consistent through this policy by integrating work related to traffic concerns and traffic calming requests.

A Community Traffic Issue Reporting Form allows documentation of the issue and its reporter, and streamlines the process. Recommendations outline responsibilities for County staff, which include:

- Record traffic complaints received from the public, Council, or staff and follow the traffic issue resolution process to assess the requirements;
- Undertake preliminary investigation for traffic calming requests;
- Determine the type of intervention required;
- Find the appropriate measure based on the identified problem;
- Communicate the proposed solution with the initiator, County Council, local municipal staff, and residents; and
- Add projects to list of capital projects.

3.2.5 Lanark County Cycling Plan (2009)

The Lanark County Cycling Plan's purpose is to "provide guidance on the implementation of cycling facilities to encourage this transportation mode". By supporting cycling the County aims to provide individual, social, environmental, and economic benefits, reduce the number of vehicles on the road, and improve public health.

Although the distances between trip origins and destinations in the County are often too far to cycle, the benefits of cycling are becoming more widely understood resulting in greater support. Recommendations span physical, operational, educational, and incentive measures. Physical and operational measure recommendations include the installation of cycling signage, connecting cycling facilities together in a network, and provision of cycling facilities for new, widened, and reconstructed County roads within the right-of-way. Some educational and incentive measures include the development of a cycling map that promotes cycling routes in the County, promotion through special events and work with community organizations, and raising awareness for developers with regards to the need to provide cycling facilities and accommodations.

3.3 TOWN OF PERTH

3.3.1 Town of Perth Official Plan (2015)

The Town of Perth Official Plan policies envision a "safe, functional transportation network that facilitates the movement of motorized, non-motorized and pedestrian traffic within and through the town" (Section 5.5). Plan objectives include the design of a transportation system that supports the use of high-occupancy vehicles, bicycles and walking including the development of a cycling network and pedestrian-friendly corridors to support future public transportation. Cycling is recognized as a "major component of the transportation system" (Section 5.5 (F) with all new collector and arterial roads accommodating bicycle traffic through bike lanes or wide (4.2m) curb lanes (Section 5.5.1.2). Principles of sustainability are integrated into community development policies to reduce the need for motorized vehicles and encourage the use of alternate travel modes. Policies include urban design, route planning, mixed land use; and planning for transportation services (carpooling, car sharing, private and/or public transit service) (Section 5.9.3). Community improvement goals include providing for traffic circulation in the Town that will meet the needs of residents and visitors, and the designation of specific routes for heavy trucks. (Section 9.12.5.7(9)).

Population growth estimates for the Town of Perth were established through the Lanark County Sustainable Communities Official Plan (LCOP) to be 6,767 people by 2031(medium) and 7,615 (high). The Town of Perth OP anticipates the high growth scenario since it reflects recent removal of servicing and land availability constraints that had limited growth in the past.

Road classifications and design guidelines (Schedule B) include arterial, collector and local roads. New arterial roads (Section 5.5.2) are planned for right-of-way widths of 26-30m and include bicycle lanes. Sidewalks are to be included on both sides subject to available funding (5.5.7). Intersections of arterial roads or an arterial road and a collector road are expected to include traffic circles (roundabouts) or centre medians along all approaches. Drummond Street is designated a secondary arterial to recognize the existing function of the roadway, however road widening along this corridor is to be avoided in residential areas unless required to improve traffic safety.

New collector roads (Section 5.5.3) have a right-of-way width of 20-26m and may or may not have a median (if a median is present right-of-way widths may increase to 35m). Speed limits are to be set between 50 and 60 km/hr. Major Collector Roads have a minimum width of 23m and include bike lanes. Central medians are encouraged at intersections between collector roads and arterials, highways or new commercial driveways. All collector roads include sidewalks on one side (subject to available funding) (Section 5.5.7).

Local roads (Section 5.5.4) are designated with a right-of-way width of 18.5m to 20 m with a minimum 16.75m for local roads with rear access laneways or low volumes of traffic.

Recreational trails (Section 5.5.9) are recognized to function for both recreation and non-motorized transportation and are to be integrated with the road network, link to the Rideau Trail and use the open space along the Tay River and Canal. Trails should also consider connections between the tow path, Conlon Farm, wetlands, downtown, residential neighbourhoods and Algonquin College. (Section 8.1.3.20(d)6).

Future transportation corridors identified in the OP include the identified corridor for a future arterial road in the northeastern part of the Town between Highway 7 and Craig Street (County Road 43); extensions of Drummond Street and Wilson Street to the north; and the east-west collector road identified in the Secondary Plan area between Drummond Street and County Road 511. Any cycling or pedestrian networks identified through the Transportation Master Plan are intended to be protected under the OP.

The Wilson Street corridor is identified as a gateway to the town from Highway 7. A Gateway design for the intersection of Wilson Street and Dufferin Street / Highway 7 was adopted by Council in August 2011.

3.3.2 Town of Perth Strategic Plan 2022 (May 2015)

The Town's Strategic Plan presents the following vision for the community: "To be a sustainable community that respects both its Heritage and Natural Environment, while enabling a balanced lifestyle by means of a vibrant economy." The Plan is divided into seven sectors with strategic initiatives (SI) and actions to achieve the vision statement within each of these sectors over the next ten years.

The following initiatives are of relevance to the TMP:

Sector 2, Infrastructure: The Strategy envisions a safe, sustainable, multi-modal transportation system and community where people walk to work (SI 7F). The Strategy calls for the completion of a Transportation Master Plan (TMP) which is intended to update the 1991 plan, include a review of parking, pedestrian movement, cycling and opportunities for a public trail system (SI 7A); and support tourism priorities through a bicycle pathway system through the Town (SI 2B). Specific initiatives related to pedestrian and bicycle route development include: consideration of pedestrian and bicycle pathways in new utility corridors (SI 4C), inclusion of pedestrian and cycling network elements in subdivision and other Planning approvals (SI 7D); provide connectivity to County and Provincially significant walking/cycling routes (SI 7C); combine local funding with funding from other sources to support development of active transportation networks (SI 7E); and develop a ten (10) year plan to achieve the desired pedestrian / cycle network (SI 7G).

Sector 4, Planning and Development: The Strategy calls for the identification of pedestrian and cycling network corridors in the TMP (SI 5B); and review/development of a cash in lieu Parking Policy (SI 6G).

Sector 6, Quality of Life: The Strategy includes a set of actions to promote services for cyclists that will support development of bicycle routes and pathways (SI 6).

3.3.3 Town of Perth Transportation Master Plan (1991)

The Town of Perth Master Transportation Study's objective was to prepare a long-term transportation plan to outline the future roadway requirements of the Town. Analysis was conducted in relation to traffic patterns associated with alternative road networks within the study area.

Sections 4.0 The Future and 5.0 Recommended Long-Range Program for Improving Transportation Facilities are of most relevance to this Study. Relevant information from these sections is summarized below.

The horizon year, or planning year, for the study was 2010 in which the estimated population would be 10,800. Projected 2010 total vehicle trips in the Town and surrounding areas was estimated to be 7,450 vehicle trips in the afternoon peak hour, compared to 4,400 vehicle trips in the 1990 afternoon peak hour. A one-way street system was considered for the Town; however the advantages were insufficient when compared to the disadvantages. An Eastern By-pass alternative was proposed which would relieve traffic volumes on Wilson Street and Drummond Street and could be used as an encouraged truck route. The Eastern By-pass would have the added benefit of buffering the residential community from the noise and visual impact of traffic. Parking utilization at the time of the Master Transportation Study was adequate, and measures were included to ensure that sufficient off-street and on-street facilities would be provided in the future. Truck traffic was noted as a concern due to heavy volumes passing through the Town and the negative impacts they bring including noise, pollution, potential vibration damage to the heritage resources, disruption to residential communities, and the accelerated deterioration of roadways and heritage infrastructure.

The Eastern By-pass was recognized as a required facility for the horizon year of 2010. An extension of the Eastern By-pass, from Highway 43 to South Street was anticipated not to be required until beyond the horizon year, however it is dependent on projected development and the requirement for the construction of the South Street Bridge. It was recommended that the right-of-way for the Eastern By-pass and the southern extension be protected.

3.3.4 Town of Perth Secondary Plan (2006)

The Town undertook a secondary Plan study to implement policies for community development, heritage and infrastructure servicing in the Town's new official plan to the built-form along Dufferin Street (Highway 7) as well as to a large areas of vacant land 77 ha to the north of this highway corridor. New roadways identified through the secondary plan include three new north-south collector roads which include extensions of Wilson Street and Drummond Street, and a roadway east of County Road 511 between Highway 7 and the existing bridge. The signalized intersection

at Perth Mews/Perth Chrysler entrance was also proposed as potential for providing vehicular, pedestrian and cyclist access but is not analyzed in the secondary plan study.

Public realm design guidelines support active transportation by promoting a connected, integrated and permeable road system in the secondary plan area that facilitates pedestrian access and may support future transit. Streetscaping and roadway dimensions aim to create pedestrian and bicycle friendly streets indicating bicycle lanes on all collector roads with medians and signed bicycle routes (shared facilities) on collectors without medians and local roadways. Sidewalks are included on both sides of collectors and one side of local roads.

3.3.5 Tay River Trail Conceptual Master Plan

The Tay River Trail Master Plan goals are to create a four-season recreational trail that is designed for residents and visitors and will promote the Tay River and the Town of Perth. The trail is intended to provide a main route linking to existing and future trails through the Town of Perth and surrounding area. The completed trail is envisioned to extend from Beveridge Locks (where the Tay and Rideau Rivers meet) to Conlon Farm. The trail is proposed to be universally accessible although it is planned with a varied surface that suits and reflects the landscape and minimizes impact.

3.3.6 Town of Perth Arterial Roadway Municipal Class Environmental Assessment (EA) Study (2006)

The Town of Perth initiated this EA study to examine ways to address transportation issues related to operations, capacity and safety in the downtown area. In particular, this study looked to address issues and concerns related to truck traffic.

The preferred alternative identified through this study was a new arterial road on the east side of the town with a grade separated rail crossing connecting between Highway 7 in the north and County Road 43 in the south.

Active Transportation considerations were included in the evaluation of alternatives and the environmental commitments recommended for the detailed design of the preferred alternative. Recommendations include partially paved shoulders along the new arterial road to accommodate pedestrian and bicycle movements.

3.3.7 Heritage Perth Economic Development Strategic Plan (2013-2018)

The Economic Development Strategic Plan discusses economic trends in the Town of Perth, the threats they may pose, and provides initiatives for addressing these threats. Strategic Initiative #9 action G) is relevant to the Transportation Master Plan. It recommends to build up on the “Heritage Perth” brand to meet the expectations of the Regional Tourism market and to “Promote the beauty and health of the natural environment (including Stewart Park, the Tay River and cycling

routes) …". Many initiatives focus on tourism as a main driver for economic growth in the Town of Perth.

3.3.8 Downtown Perth Community Improvement Plan (2011)

The Community Improvement Plan was developed with the goal to improve the appearance of streetscapes and amenities, and to apply a consistent heritage theme to streetscape furniture, signage and lighting. Recommended town leadership programs to help achieve this goal include Urban Design Guidelines; a Streetscape, Pedestrian Crossing and Roadway Improvements Program (which includes coordinated street furniture, AODA compliance for the built environment and wayfinding); an Off-Street Parking Improvement Program (2012-2015); Gateway signage at the Town entrance; a signage improvement program; and an Open Space improvement Program (which includes expansion to the Town's trail network, improved connections to streets; improvements to parks and trails (amenities, landscaping), enhancements to the Tay River trail signage).

3.3.9 Tay River Trail Conceptual Master Plan (2005)

The Master Plan's goals are to create a four-season recreational trail that is designed for residents and visitors and will promote the Tay River and the Town of Perth. The trail is envisioned to provide a main route linking to existing and future trails and when completed it is intended to extend from Beveridge Locks (the junction of the Tay and Rideau River) to Conlon Farm. The trail is proposed to be universally accessible although it is planned with a varied surface that suits and reflects the landscape and minimizes impact.

3.3.10 Town of Perth Committee of the Whole Report 2015-COW-8.6: Dufferin Street Sidewalk Placement

The Town of Perth Council directed staff to include provisions in the 2016 capital budget for the installation of asphalt "sidewalks" (paved shoulders) on the south side of Dufferin Street / Highway 7 between Drummond Street and Wilson Street as the first of four phases of paved shoulder implementation along the Dufferin Street corridor. The four-stage plan is expected to be implemented from 2016 to 2019 and will provide a paved asphalt surface on the north and south sides of the corridor between Drummond Street and County Road 511 as approved by the Ministry of Transportation. This initiative including consultation with affected businesses has been led by the Wilson Street Beautification Advisory Panel (WSBAP).

3.3.11 Town of Perth Multi-Year Accessibility Plan 2013-2014

The Plan sets out the efforts being undertaken by the Town of Perth to ensure that Town programs, procedures, legislation, transportation and built-form are as free as possible from barriers for people with disabilities. The Plan functions as a reminder to the town of their responsibility to conform to the standards put forward in the Ontario Integrated Accessibility Standards Regulation 191/11.

4.0 TOWN OF PERTH TODAY

The Town of Perth is a multi-faceted community with a healthy industrial and commercial base, a broad range of public service, leisure and cultural facilities, mature residential neighbourhoods and a rich heritage. Perth influences and is influenced by its role in a regional context. The Town is one of eight municipalities in Lanark County and is a popular tourism and recreational destination for visitors from elsewhere in eastern Ontario, the nation's capital and the rest of the province.

Perth is characterised by an urban centred community of some 5,860 residents (2011) within a large rural area. Perth is a 'Central Place' as many residents from smaller urban centres and the surrounding rural area depend on Perth as the central place for employment, shopping, recreation, health, social, cultural and recreational services. This has equated to 6,010 (2011) jobs within the Town.

All these characteristics have their own unique influences on the movement of people and goods throughout Perth, and comprise the unique transportation conditions that businesses and residents experience daily. The following section details the existing transportation facilities and operations in the Town.

4.1 LAND USE

The dynamics of land use in Perth are complex. While population has been growing in the Perth area, this growth has been occurring outside of the Town, whereas employment has been increasing within the Town. This has resulted in an unusual imbalance between population and employment. Only half the jobs in Perth are filled by Perth residents; the rest are filled by commuters from the surrounding communities. This has influenced travel patterns creating more external trips coming into and out of the Town along the major thoroughfares such as Highway 7, Country Road 43, Rideau Ferry Road, and Scotch Line.

4.2 TRANSPORTATION INFRASTRUCTURE

4.2.1 Road Classification

Per the Town of Perth's Official Plan, the transportation infrastructure network consists of several different road types which are intended to serve and meet different objectives. The Town of Perth's road classification system is visualized in **Figure 1** and consists of the following:

- Provincial Highway: Within the Town of the only road that has this classification is Dufferin Street (Highway 7). This Provincial Highway provides a direct route through town.
- Arterial Roads: For arterial roads within the Town, traffic movements are this roads' major consideration. Limited access control is provided to and from arterial roads for land service

and access. Arterial roads within the Town have been designed to accommodate approximately 5,000 – 20,000 vehicles per day, will have uninterrupted flow, have a design speed between 50 – 70 km/h, accommodate all vehicles including trucks, connects with other arterials and collector roads, express and local transit bus services are permitted on arterial roads. Parking restrictions include no on-street parking, and on arterials the minimum spacing between intersections is 200 metres;

Arterial Roads within the Town include Wilson Street West, Drummond Street West (north of North Street N), Sunset Boulevard west of Wilson Street W (from north of Peter Street), North Street N (east of Wilson Street W), Peter Street (between Wilson Street W and Gore Street W), Gore Street E (from south of Peter Street), Rideau Ferry Road, Craig Street, and South Street.

- Collector Roads: For roads classified as collector within the Town, traffic movements and land service and access are considered of equal importance. Collector roads serving residential areas are designed to accommodate approximately 8,000 vehicles per day. Collector roads serving industrial and commercial areas have been designed to accommodate approximately 1,000 – 12,000 vehicles per day. Collector roads will have an "interrupted flow" characteristic, will have a design speed between 50 – 60 km/h, and will accommodate a wide range of vehicle types including: passenger, service, industrial and commercial vehicles. Collector roads will connect with local roads, collectors, and arterial roads. Transit services are permitted on collector roads. There are few parking restrictions for collector roads with the exception of on-street parking during peak hours and prohibited overnight winter parking. The minimum spacing of intersections on collector roads is 60 metres.

  Collector roads within the Town include Harris Street (between Wilson Street W and Drummond Street W), Gore Street (between North Street and Peter Street), Drummond Street E (from south of North Street), Wilson Street W (between Peter Street and Herriot Street), Peter Street (between Rogers Road and Wilson Street W), Sherbrooke Street E, Chetwynd Drive, Rogers Road (between Peter Street and South Street), Harvey Street (between Rogers Road and Gore Street E).

- Local Roads: For roads classified as local within the Town, traffic movements are considered second, and the primary function of these roads are to provide land access. Local roads servicing residential areas have been designed to accommodate approximately 1,000 vehicles per day, and local roads serving commercial areas have been designed to accommodate approximately 3,000 vehicles per day. Local roads have the flow characteristic of interrupted flow, have a design speed between 30 – 50 km/h, and accommodate passenger and service vehicles of all types. Local roads will connect with public lanes, local roads, and collector roads. Transit services are generally avoided on local roads. There are typically no parking restrictions for local roads but parking is typically limited to one side of the street and some roads are too narrow to permit parking. The minimum spacing of intersections on local roads is 60 metres.

Local roads within the Town include Dufferin Road, Elliot Street, Welland Street, Railway Street, Haggary Street, Argyle Drive, Inverness Avenue, Mather Street, McLean Boulevard, George Avenue, Thomas Avenue, Daines Place, Scott Crescent, Ivey Place, Ridgeview Place, Robert Road, Taggart Crescent, Perkins Boulevard, Harris Street N (from east of rail line), Garden Avenue, Antonio Way, Decaria Boulevard, Treelawn, Perthmore Street, Mary Street, Stewary Street, Alexander Street, Leslie Street, Isabella Street, Queen Street, Joy Avenue, Kippen Street, Alvin Street, Clyde Street, Lustre lane, Alma Street, Sinclair Street, North Street (west of Wilson Street N), Peter Street (west of Rogers Road), Gore Street W (north of North Street), Victoria Street, Boulton Street, John Street, Lewis Street, Herriot Street, Markey Square, Mill Street, Grant Street, Lansdowne Street, Church Street, Mac Campbell Drive, Smith Drive, Harvey Street (east of Gore Street), Brock Street, Cockburn Street, Irwin Street, Cole Street, Baynes Street, Provost Street, Beckwith Street, Sherbrooke Street, South Street, Halton Street, Arthur Street, Robinson Street, Industrial Road, Rogers Road (south of South Street), Warren Crescent, Jessie Drive, Hughes Crescent, Morgan Avenue, and Tysick Avenue.

- Private Road and Public Lanes (Residential and Commercial): The primary function of private roads and public laneways is to provide land access only. In residential areas these roads will typically carry less than 500 vehicles per day. In a commercial area they may carry up to 1,000 vehicles a day. Private roads and public laneways have the flow characteristic of interrupted flow, have a design speed between 30 – 40 km/h, and accommodate passenger and service vehicles of all types. These roads will connect with only other public lanes and local roads. Transit services are not permitted on this road classification. There are some parking restrictions. The minimum spacing of intersections on private roads and public laneways is as needed.

  Private roads and public laneways within the Town include Lola Lane, Colborne Lane, Basin Lane, Baby Lane, Bathurst Road, Lambert Lane, Dufferin Square Lane, and Lally Lane.

- Utility Corridor: There are currently three utility corridors within the Town:
  - Running parallel between Beckwith Street and Chetwynd Street, north from Craig Street to just south of Riverside Drive;
  - Running parallel and situated just south of South Street, between Industrial Road and Rogers Road; and
  - Running parallel and situated just south of Jessie Drive, between Industrial Road and Rideau Ferry Road.

4.2.2 Corridor Exchange

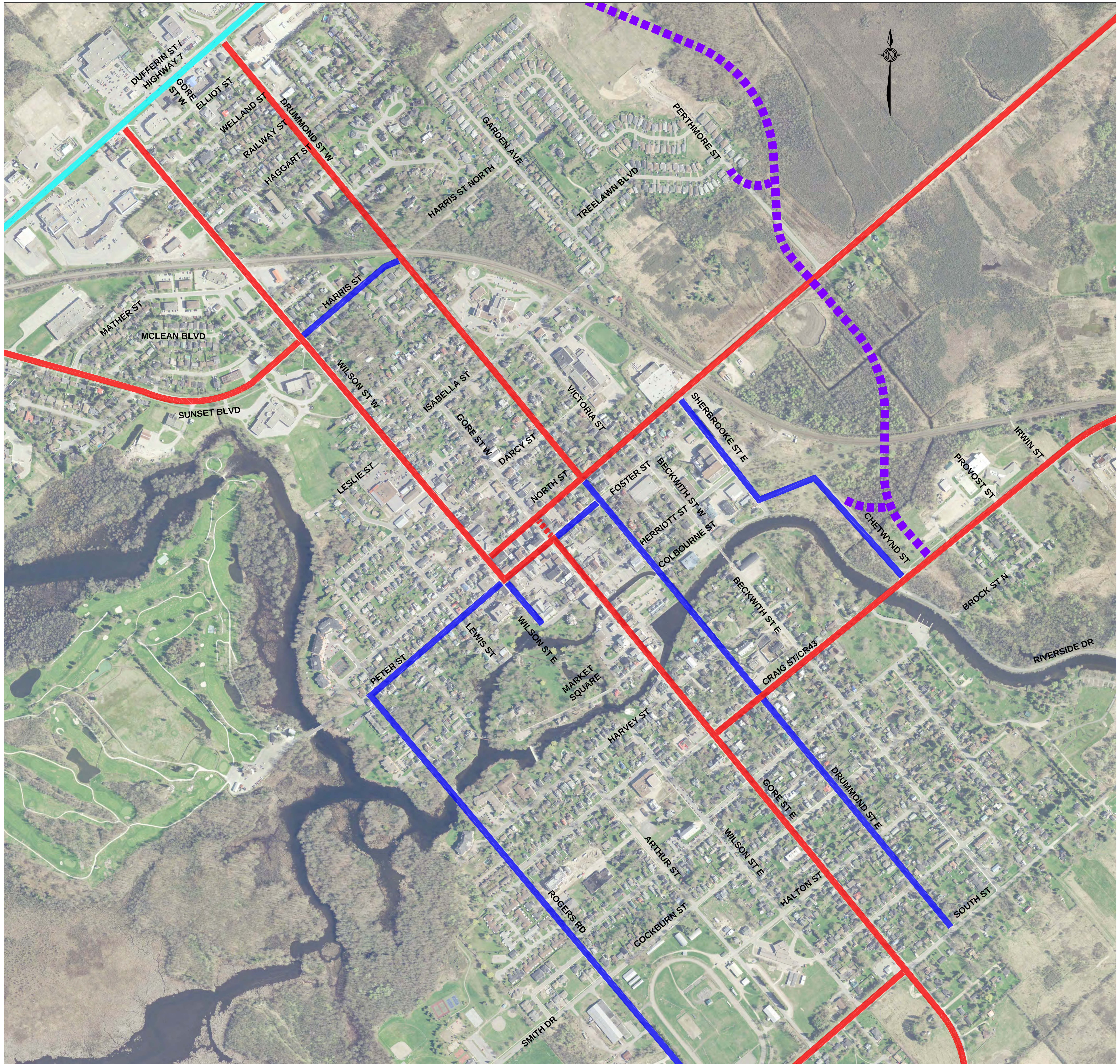
In 2012 the Town of Perth assumed Gore, Sunset, and North Streets from the County of Lanark in exchange for future assumption by the County of a future proposed New Arterial Road (NAR) in the east of Perth that would extend between Highway 7 in the North and Country Road 43 in the south. Based on this agreement the Town is now responsible for the maintenance and upkeep of these roadways, while the County shall be responsible for the maintenance of the future NAR. In addition to maintenance and upkeep, the roadways will be under the jurisdiction of the Town of Perth's by-laws.

4.2.3 Signalized Intersections

There are several signalized intersections within the Town detailed in **Table 1**.

Table 1 - Existing Signalized Intersections

Location	Ownership
Highway 7 and Perth Mews Access;	Provincial-Ministry of Transportation
Highway 7 and Wilson Street;	Provincial-Ministry of Transportation
Highway 7 and Drummond Street;	Provincial-Ministry of Transportation
Highway 7 and Lanark Road;	Provincial-Ministry of Transportation
Wilson Street and Perth Mews Access;	Municipal- Town of Perth
Wilson Street and Sunset Boulevard-Harris Street;	Municipal- Town of Perth
Wilson Street and Leslie Street-Isabella Street;	Municipal- Town of Perth
Wilson Street and Foster Street;	Municipal- Town of Perth
Gore Street and Foster Street;	Municipal- Town of Perth
Gore Street and Craig Street;	Municipal- Town of Perth
Gore Street-Rideau Ferry Road and South Street	County- County of Lanark



LEGEND

- PROVINCIAL HIGHWAY
- ARTERIAL ROADS
- COLLECTOR ROADS
- NEW ARTERIAL ROAD CORRIDOR
- POTENTIAL CHANGE TO ARTERIAL ROAD CLASSIFICATION

*NOTE: ALL OTHER ROADS ARE LOCAL ROADS

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS	SK	CS	15.02.02
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the
Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 1
OFFICIAL PLAN ROAD CLASSIFICATIONS

Project No.	Scale	
165000919	1:5000	
Drawing No.	Sheet	Revision
1	of	0

4.2.4 Downtown Parking

There are five off-street parking lots and 19 on-street parking areas within the Downtown Business Improvement Area (BIA). Four of the five off-street lots are municipally owned and operated while one is privately owned and municipally operated. These lots charge $1 per hour of usage while the on-street parking is free of charge with a 2-hour parking time limit. The combined parking supply for the entire BIA is 484 spaces.

Table 2 - Downtown Parking Inventory

Parking Type	Location	# of Spaces
On-Street	Gore Street between Harvey Street and Herriott Street, East Side	25
	Gore Street between Herriott Street and Foster Street, East Side	11
	Gore Street between Harvey Street and Herriott Street, West Side	23
	Gore Street between Herriott Street and Foster Street, West Side	13
	Gore Street between North Street and Foster Street, West Side	4
	Gore Street between North Street and Foster Street, East Side	3
	Basin Street/Tay Street	9
	Market Square	30
	Herriott Street between Gore Street and Drummond Street, South Side	12
	Herriott Street west of Gore Street, North Side	13
	Drummond Street between Herriott Street and Colbourne Street, West Side	4
	Foster Street between Gore Street and Drummond Street, South Side	12
	Foster Street between Gore Street and Drummond Street, North Side	12
	North Street between Gore Street and Drummond Street, South Side	12
	Wilson Street, north of North Street, East Side	8
	Wilson Street, south of Foster Street, Both Sides	3
	Wilson Street, between Foster Street and North Street, East Side	10
	Foster Street west of Gore Street, North Side	4
	Foster Street west of Gore Street, South Side	11
Off-Street	Wilson Street Parking Lot	56
	Code's Mill Parking Lot	27
	Herriot Street Lot 1 (formerly Chamber of Commerce Parking Lot)	41
	Herriot Street Lot 2 (formerly Museum Parking Lot)	66
	Tay Basin Parking Lot	67
	Community Centre Parking Lot*	20
***Note:** The Community Centre Parking Lot was not analyzed as it was not operational during surveying.		

4.2.5 Active Transportation

Perth, due to it's compact built-form, is generally a walkable community. There is good coverage of pedestrian sidewalks with connections to existing trails and cross-town sidewalks that give a realistic option for walking around town.

There are currently very few cycling routes within the Town, however there are several recreational, and regional trails that connect to the Town. In particular, the Rideau Heritage route that extends from Ottawa all the way to Kingston, as well as various Perth Area Cycling Routes that connect Perth to various local towns and municipalities. While most of these routes go through Perth, the majority make use of non-dedicated roadways along Wilson Street and Gore Street as recommended routes, in addition other regional connections along County Roads 1, 10, 43, and 511 provide connections to the rest of Lanark County but are not explicit bike routes, but rather paved shoulders that provide more protection for cyclists compared to non-paved shoulder roadways. Local and regional active transportation connections are detailed in the table below and routes going through and within Perth are visualised in **Figure 2**:

Table 3 - Active Transportation Facility Inventory

Active Transportation Facility	Type	Connections	Length
Rideau Heritage Route	Multi-Use	• Ottawa • Manotick • Kars • North Grenville • Merrickville • Smiths Falls • Westport • Portland • Newboro • Elgin • Delta • Lyndhurst • Seeley's Bay • Kingston	202 km
Tow Path Trail	Multi-Use	• Lanark Lodge • East side of Tay River	0.5 km
Wilson Street	Bike Lane	• Between Harris St and Leslie St	
Route 1 - Glen Tay	Cycling	• Glen Tay	15 km
Route 2 - Murphy's Point	Cycling	• Murphy's Point Provincial Park	42 km
Route 3 - Harper/Balderson	Cycling	• Glen Tay • Harper • Balderson	26 km
Route 4 - Maberley	Cycling	• Glen Tay • Dewitts Corners • Christie Lake Camp • Bolingbroke • Maberley	93 km

Active Transportation Facility	Type	Connections	Length
		• Elphin • McDonald's Corners • Playfairville • Fallbrook • Balderson	
Route 5 – Fallbrook	Cycling	• Timber Run Golf Course • Balderson • Fallbrook • Playfair Historic Church • Blue Heron Golf Course	25 km
Route 6 - Middleville	Cycling	• Middleville • Baird Trail • Herron Mills • Village of Lanark	31 km
Route 7 – McDonald's Corners	Cycling	• Heron Golf Course • Casawenate Campground • Playfairville Historic Church • Sedge Meadow Nature Observatory • Mcdonald's Corners • Dalhousie Glen • Purdon Conservation Area • Village of Lanark	40 km
Route 8 – Ferguson Falls	Cycling	• Ferguson Falls • Timber Run Golf Course	24 km
Route 10 – Westport	Cycling	• Murphy's Point Provincial Park • Narrows Locks • Newboro • Westport	88 km
County Road 1	Cycling	• Paved shoulders between CR 10 and Rideau Ferry Road	
County Road 10	Cycling	• Paved shoulders west from CR 1 to CR 14 and between Perthmore Street to Highway 15	
County Road 43	Multi-Use	• Between Chetwynd and Provost	0.3 km
County Road 511	Cycling	• Paved shoulders Perth to Lanark	
Trans Canada Trail	Cycling	• Across Canada	

LEGEND

- BICYCLE TOUR ROUTES
- TRANSCANADA TRAIL
- RIDEAU TRAIL
- EXISTING MULTI-USE TRAIL
- EXISTING BIKE LANE
- EXISTING LANARK OFFICE TRAIL

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS	SK	CS	15.02.02
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 2
EXISTING ACTIVE TRANSPORTATION ROUTES

Project No.	Scale
165000919	1:5000

Drawing No.	Sheet	Revision
2	of	0

4.3 TRAFFIC OPERATIONS

4.3.1 Turning Movement Counts

Traffic data collection was undertaken with manual turning movement and classification counts (TMCs) and automatic traffic recorders (ATRs). The TMCs were conducted in October 2014 over an eight-hour period on a typical weekday (Tuesday, Wednesday, or Thursday) in 15 minute intervals classifying cars, trucks, pedestrians, and bikes during the a.m., midday, and p.m. peak periods (7-10 a.m., 11:30 a.m.-1:30 p.m., 3-6 p.m.) at the following locations and visualised in **Figure 3**:

1) Dufferin Street/Hwy 7 at Wilson Street W;
2) Dufferin Street/Hwy 7 at Drummond Street W;
3) Wilson Street W at Perth Mews Access;
4) Wilson Street W at Sunset Boulevard/Harris Street S;
5) Wilson Street W at Isabella Street;
6) Wilson Street W at North Street;
7) Gore Street E at North Street;
8) Drummond Street W at North Street;
9) Wilson Street W at Peter Street/Foster Street;
10) Gore Street E at Foster Street;
11) Drummond Street at Foster Street;
12) Gore Street E at Herriott Street;
13) Gore Street E at Craig Street/CR 43;
14) Craig Street/CR 43 at Riverside Drive/Chetwynd Street;
15) Gore Street E at South Street; and
16) Dufferin Street/Hwy 7 at Perth Mews Access.

The a.m. and p.m. peak hour vehicle traffic volumes and pedestrian crossings as well as the total truck and cyclist volumes for the eight-hour count period can be found in **Appendix A**.

These p.m. peak hour traffic volumes were compared to the Town of Perth's *Transportation Study Report, January 1991*. The latter volumes are generally comparable to the October 2014 volumes as they were also collected outside of the summer season (April 1990). A summary of this comparison is shown in **Table 4**. Locations where the per annum compound growth rate exceeds 1.00% are identified with bold text. Locations where traffic volumes have decreased are identified with red text.

Table 4 - Two-Way PM Peak Hour Traffic Volume Growth

Road	Section	April 1990	October 2014	Change	Per Annum Growth
Dufferin St/Hwy 7	Between CR 511 and Wilson St	1,125	1,277	152	0.5%
	Between Wilson St and Drummond St	830	991	161	0.7%
	E of Drummond St	**600**	**795**	**195**	**1.2%**
Wilson St	Between Dufferin St and Sunset Blvd	1,095	877	-218	-0.9%
	Between Sunset Blvd and Isabella St	1,320	1,344	24	0.1%
	Between Isabella St and North St	1,285	1,111	-174	-0.6%
	Between North St and Foster St	1,150	950	-200	-0.8%
Gore St	N of North St	290	262	-28	-0.4%
	Between North St and Foster St	340	389	49	0.6%
	Between Foster St and Herriott St	940	912	-28	-0.1%
	Between Herriott St and Craig St	965	955	-10	0.0%
	Between Craig St and Scotch Line	680	753	73	0.4%
Rideau Ferry Rd	**S of Scotch Line**	**460**	**608**	**148**	**1.2%**
Drummond St	South of Dufferin St	530	579	49	0.4%
Sunset Blvd	W of Wilson Street	480	422	-58	-0.5%
Craig St	E of Gore Street	450	439	-11	-0.1%
	W of Gore Street	590	621	31	0.2%
Scotch Line	W of Gore Street	400	489	89	0.8%
North St	Between Wilson St and Gore St	250	254	4	0.1%
	Between Gore St and Drummond St	235	222	-13	-0.2%
	E of Drummond St	**270**	**435**	**165**	**2.0%**
Foster St	Between Wilson St and Gore St	830	674	-156	-0.9%
	Between Gore St and Drummond St	195	137	-58	-1.5%
	E of Drummond St	**70**	**108**	**38**	**1.8%**

Key conclusions from this comparison are as follows:

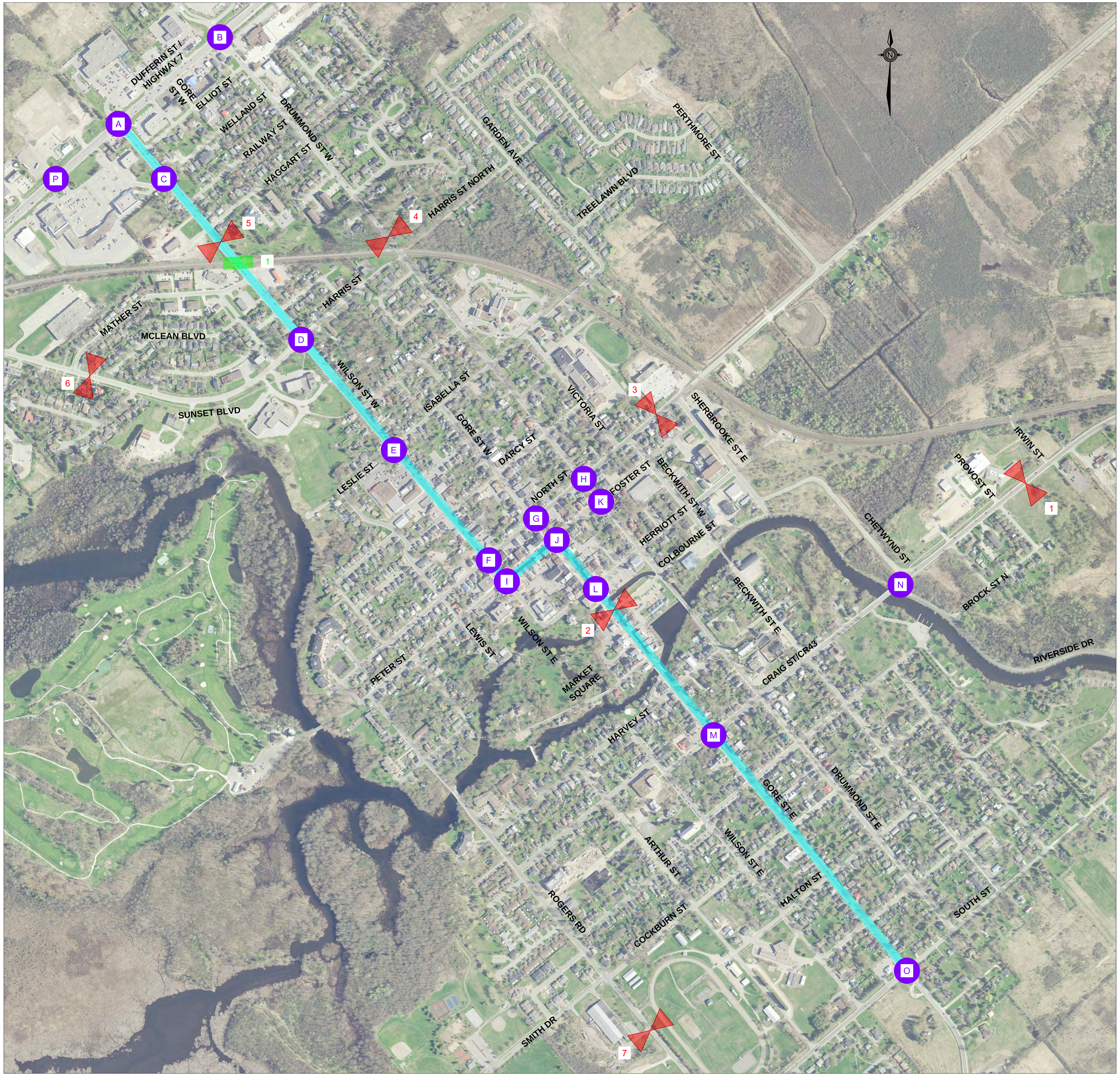
- Wilson Street and Foster Street p.m. peak hour traffic volumes have decreased between 1990 and 2014;
- Many roadways have experienced little to no change in traffic volumes; and
- Traffic volumes on roadways to/from destinations outside of Perth have increased, such as Dufferin Street/North Street to Carleton Place and Ottawa, and Rideau Ferry Road and Scotch Line to Kingston and Brockville.

In the Town, there are no arterial roadways that provide continuous north-south travel between Craig Street and Dufferin Street. The roadway pair of Wilson Street and Gore Street is discontinuous requiring turning movements along Foster Street and North Street. Drummond Street functions as a collector road providing access for low-density single-family residential developments, and consequently, would be an undesirable roadway for higher auto and truck traffic volumes.

There are opportunities to improve the connectivity of the Town's transportation network to the broader County and Provincial transportation network.

In comparison to traffic volumes collected in May 2007 for the Town of Perth's *Arterial Roadway Municipal Class EA Study, June 2008*, the October 2014 p.m. peak hour traffic volumes were lower, ranging from 400 vehicles less on Dufferin Street/Highway 7 and the north end of Wilson Street, to 30-100 vehicles less on more southerly locations along Wilson Street, Gore Street, Craig Street, and Foster Street.

It should be noted that these comparisons only reflect volume changes in the weekday p.m. peak hour during the non-summer seasons and not weekend, summer, or daily traffic volume changes. Comparisons of these other types of volumes were not possible due to limitations in the available traffic data.



LEGEND

- (A) TURNING MOVEMENT COUNT (NOTE 1)
- AUTOMATIC TRAFFIC RECORDER (ATR) (NOTE 2)
- TRAVEL TIME RUN PATH (NOTE 3)
- RAILWAY COUNT (NOTE 4)

TURNING MOVEMENT COUNT LOCATIONS

A. DUFFERIN ST/HWY 7 AT WILSON ST W
B. DUFFERIN ST/HWY 7 AT DRUMMOND ST W
C. WILSON ST W AT PERTH MEWS ACCESS
D. WILSON ST W AT SUNSET BLVD/HARRIS ST S
E. WILSON ST W AT ISABELLA ST
F. WILSON ST W AT NORTH ST
G. GORE ST E AT NORTH ST
H. DRUMMOND ST W AT NORTH ST
I. WILSON ST W AT PETER ST/FOSTER ST
J. GORE ST E AT FOSTER ST
K. DRUMMOND ST AT FOSTER ST
L. GORE ST E AT HERRIOTT ST
M. GORE ST E AT CRAIG ST/CR 43
N. CRAIG ST/CR 43 AT RIVERSIDE DR/CHETWYND ST
O. GORE ST E AT SOUTH ST
P. DUFFERIN ST/HWY 7 AT PERTH MEWS ACCESS

ATR LOCATION

1. CRAIG ST/CR 43 BETWEEN PROVOST ST & IRWIN ST
2. GORE ST BETWEEN HERRIOTT ST & MARKET SQ/BASIN ST
3. NORTH ST/CR 10 BETWEEN SHERBROOKE ST E & BECKWITH ST W
4. DRUMMOND ST W BETWEEN HARRIS ST N/S & PERKINS BLVD
5. WILSON ST W BETWEEN MATHER ST & HAGGART ST
6. SUNSET BLVD BETWEEN MATHER ST & GEORGE AVE
7. ROGERS RD BETWEEN SOUTH ST/CR 10 & COCKBURN ST/SMITH DR

RAILWAY COUNT LOCATION

1. WILSON ST W AT-GRADE CROSSING

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

1. TURNING MOVEMENT COUNTS OF CARS, TRUCKS, PEDESTRIANS, AND CYCLISTS UNDERTAKEN ON ONE WEEKDAY (TUESDAY, WEDNESDAY, OR THURSDAY) PRIOR TO OCTOBER 9, 2014. COUNTS TAKEN AT 15-MINUTE INTERVALS OVER A TOTAL OF 8 HOURS (7:00AM - 10:00AM, 11:30AM - 1:30PM, 3:00PM - 6:00PM).
2. AUTOMATIC TRAFFIC RECORDERS (ATRs) WERE USED OVER 7 DAYS PRIOR TO OCTOBER 9, 2014. ATRs RECORDED VOLUME, SPEED, AND CLASSIFICATION BY DIRECTION OF TRAFFIC IN 1-HOUR INTERVALS.
3. THE TRAVEL TIME RUN STUDY WAS UNDERTAKEN ON ONE WEEKDAY (TUESDAY, WEDNESDAY, OR THURSDAY) IN THE MORNING (7:00AM - 9:00AM) AND AFTERNOON (4:00PM TO 6:00PM). THE STUDY COUNTED THE TOTAL NUMBER OF COMPLETE CIRCUITS THAT WERE POSSIBLE WITHIN EACH 2-HOUR WINDOW.
4. RAILWAY COUNTS WERE UNDERTAKEN OVER TWO WEEKDAYS (TUESDAY, WEDNESDAY, AND/OR THURSDAY) FOR A TOTAL OF 48 HOURS. RAILWAY COUNTS RECORD THE TIME WHEN THE RAILWAY CROSSING ARM IS LOWERED AND THE TIME WHEN THE RAILWAY CROSSING ARM IS RAISED.

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS	SK	CS	15.02.02
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 3
DATA COLLECTION

Project No.	Scale	
165000919	1:5000	
Drawing No.	Sheet	Revision
3	of	0

4.3.2 Automatic Traffic Recorder Counts

The ATRs collected volume, speed, and classification in one-hour intervals in October 2014 at the following locations and visualised in **Figure 3**:

1) Craig Street/CR 43 between Provost Street and Irwin Street;
2) Gore Street between Herriott Street and Market Square/Basin Street;
3) North Street/CR 10 between Sherbrooke Street E and Beckwith Street W;
4) Drummond Street W between Harris Street N/S and Perkins Boulevard;
5) Wilson Street W between Mather Street and Haggart Street;
6) Sunset Boulevard between Mather Street and George Avenue; and
7) Rogers Road between South Street/CR 10 and Cockburn Street/Smith Drive.

A review of the daily profiles of weekday traffic volumes indicates typical rural local traffic profiles with a small morning peak typically around 8:00 to 9:00 a.m., traffic volumes gradually increasing over the course of the day and then peaking between 4:00 and 5:00 p.m. Weekend traffic gradually increases from 8:00 a.m. onwards and typically peaks in the mid-afternoon between 3:00 and 4:00 p.m. Traffic volumes then rapidly decrease for the remainder of the day. Examples of these profiles are shown for Gore Street between Herriott Street and Market Square/Basin Street for weekday and weekend traffic in **Figure 4** and **Figure 5**, respectively.

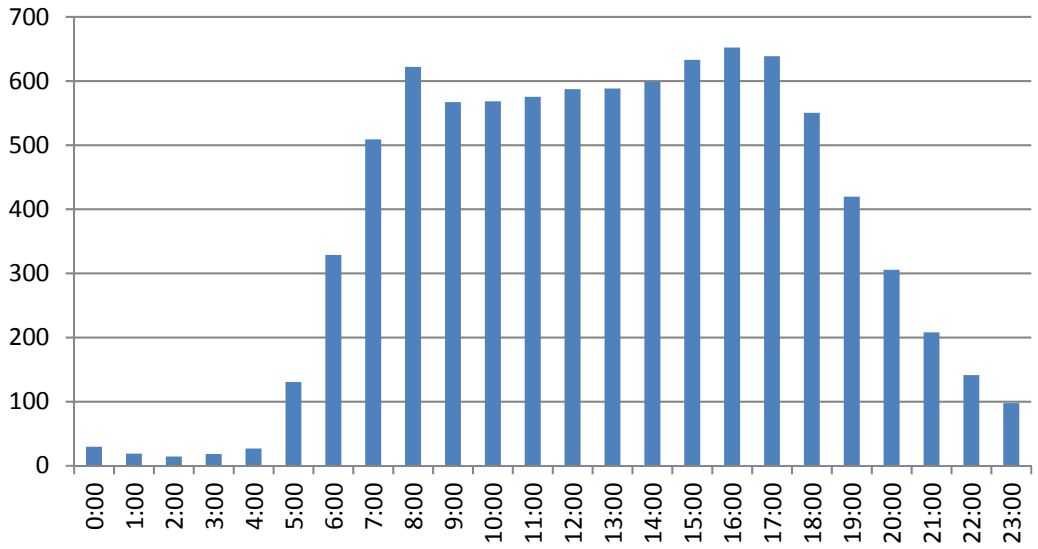


Figure 4 - Gore Street Weekday Traffic Profile

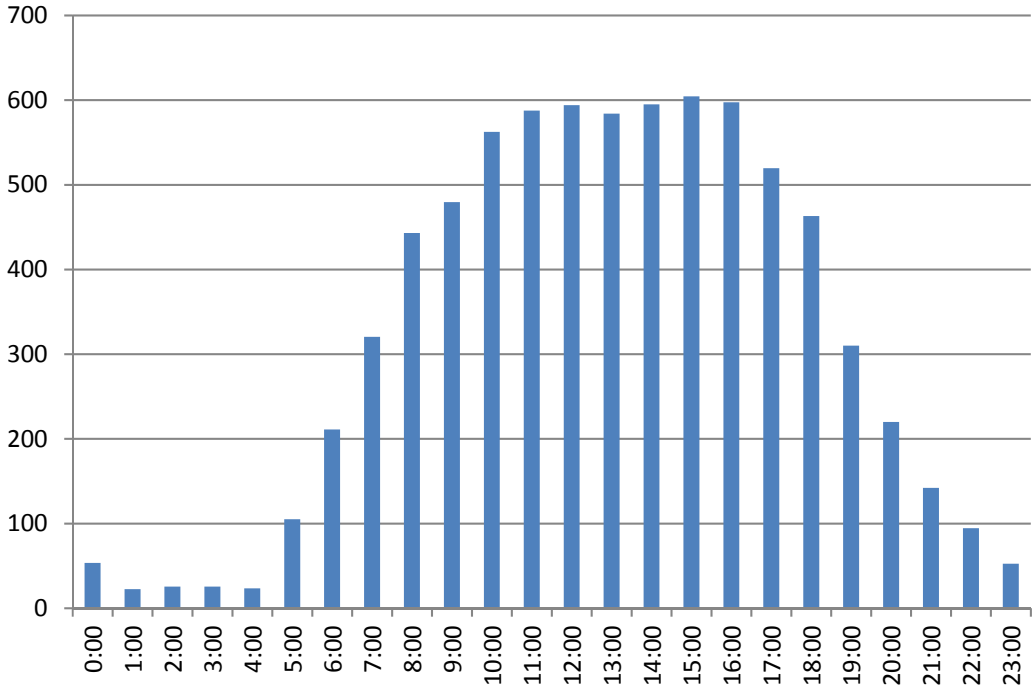


Figure 5 - Gore Street Weekend Traffic Profile

A summary of the average weekday and average weekly daily traffic volumes are shown in **Table 5**.

Table 5 - Average Daily Traffic Volumes

Location	Direction	Average Weekday	Average Weekly
Craig Street/CR 43 between Provost Street and Irwin Street	EB	3,098	2,853
	WB	3,089	2,837
	2-Way	*6,186*	*5,690*
Gore Street between Herriott Street and Market Square/Basin Street	NB	4,491	4,256
	SB	4,340	4,047
	2-Way	*8,830*	*8,303*
North Street/CR 10 between Sherbrooke Street E and Beckwith Street W	EB	2,093	1,973
	WB	2,088	1,977
	2-Way	*4,181*	*3,950*
Drummond Street W between Harris Street N/S and Perkins Boulevard	NB	2,879	3,098
	SB	3,092	3,190
	2-Way	*5,971*	*6,288*
Wilson Street W between Mather Street and Haggart Street	NB	5,402	5,232
	SB	5,102	4,923
	2-Way	*10,505*	*10,154*
Sunset Boulevard between Mather Street and George Avenue	EB	1,816	1,630
	WB	1,506	1,351
	2-Way	*3,322*	*2,981*
Rogers Road between South Street/CR 10 and Cockburn Street/Smith Drive	NB	1,048	924
	SB	1,157	1,029
	2-Way	*2,204*	*1,953*

At a planning level, the typical threshold of daily traffic volume for considering the widening of a two-lane roadway to a four-lane roadway is 15,000 vehicles per day. Therefore, the roadways have sufficient capacity to accommodate existing fall traffic demands. However, it is understood that in the *Evaluation of Arterial Roads in Perth Staff Report, October 1 2013*, higher average annual daily traffic (AADT) volumes were presented, which would include the effect of summer traffic volumes. For example, the 2013 information noted Wilson Street at 13,000 vehicles per day, which is approaching the 15,000 vehicles per day threshold.

Speed data is discussed in further detail in section 4.4.2.

4.3.3 Level of Service (LOS) Analysis

The quality of intersection operations is typically measured in terms of level of service (LOS). The LOS is assigned based on average delay per vehicle and includes deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS ranges from LOS A (10 seconds or less average delay) to LOS F (greater than 80 seconds average delay) as shown in **Table 6**.

Table 6 - Level of Service Criteria - Signalized Intersections

Level of Service (LOS)	Delay (seconds / vehicle)
A	0 – 10 seconds
B	> 10 – 20 seconds
C	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

The LOS criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections primarily because the characteristics of different transportation facilities result in different driver perceptions. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than an unsignalized intersection. Therefore, the delay values for unsignalized intersections have a smaller range, i.e. from 10 seconds or less average delay for LOS A to average delay of greater than 50 seconds for LOS F as shown in **Table 7**.

Table 7 - Level of Service Criteria - Unsignalized Intersections

Level of Service (LOS)	Delay (seconds / vehicle)
A	0 – 10 seconds
B	> 10 – 15 seconds
C	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

Acceptable operations are generally considered to be LOS C or better. However, during peak hours, a LOS D is considered acceptable for through movements and the overall intersection, and a LOS E is considered acceptable for turning movements.

Like LOS, the volume to capacity (v/c) ratio for signalized intersections is calculated as a whole (sum of critical movements), and for individual movements. For unsignalized intersections, LOS is only calculated for those movements that conflict with opposing free-flow traffic and is not defined for the intersection as a whole.

While the LOS and v/c for each movement are related, they are calculated independently. Therefore, it is possible to have a poor level of service associated with a low v/c ratio or a good level of service associated with a high v/c ratio. The designation LOS F does not automatically imply that the intersection or movement is over capacity, nor does a LOS better than E automatically imply that unused capacity is available.

To assess the existing peak hour traffic conditions, a level of service analysis was undertaken for the Study Area intersections using Synchro 8.0 Software, which implements the methods of the 2010 Highway Capacity Manual. The key parameters used in the analysis include:

- Existing lane configurations;
- Existing signal timings as provided by the Ontario Ministry of Transportation and by the Town of Perth (via Partham Engineering);
- Heavy vehicle percentages as derived from existing traffic counts;
- Peak hour factor as derived from existing traffic counts;
- Pedestrian and bicycle volumes as derived from existing traffic counts; and
- Synchro default values for all other inputs.

The results of the analysis are tabulated in **Table 8**, which includes level of service, delay in seconds, volume to capacity ratio, and queue length in metres. Detailed Synchro worksheets are attached in **Appendix A**.

Table 8 - Peak Hour Level of Service Analysis

Intersection	Approach/Movement		A.M. Peak Hour				P.M. Peak Hour			
			LOS	Delay	v/c	Q	LOS	Delay	v/c	Q
Highway 7/ Perth Mews Mall Access *Signalized*	EB	Left/Thru-Thru	B	11	0.38	39	B	11	0.28	35
		Right	A	8	0.02	1	A	9	0.05	7
	WB	Left/Thru-Thru/Right	A	4	0.23	16	A	6	0.34	35
	NB	Left/Thru	C	30	0.06	6	C	34	0.57	36
		Right	C	29	0.01	0	C	28	0.03	6
	SB	Left/Thru/Right	-	-	-	-	-	-	-	-
	Overall Intersection		***A***	***8***	***0.30***	***-***	***B***	***11***	***0.37***	***-***
Highway 7/ Wilson Street *Signalized*	EB	Left/Thru-Thru/Right	B	15	0.40	40	B	17	0.34	32
	WB	Left/Thru-Thru/Right	A	10	0.35	29	B	12	0.41	36
	NB	Left/Thru	C	28	0.60	46	D	35	0.77	74
		Right	C	22	0.07	10	C	21	0.10	12
	SB	Left/Thru	C	30	0.18	14	C	30	0.30	26
		Right	C	29	0.02	< 1	C	27	0.03	3
	Overall Intersection		***B***	***17***	***0.42***	***-***	***B***	***20***	***0.44***	***-***
Highway 7/ Drummond Street *Signalized*	EB	Left/Thru-Thru/Right	B	11	0.27	23	B	12	0.33	37
	WB	Left/Thru-Thru	A	6	0.20	18	A	7	0.24	22
		Right	A	5	0.02	2	A	6	0.01	1
	NB	Left	D	39	0.70	46	D	40	0.73	51
		Thru/Right	C	28	0.29	27	C	27	0.17	19
	SB	Left	C	26	0.06	6	C	26	0.07	8
		Thru/Right	C	27	0.16	17	C	27	0.16	18
	Overall Intersection		***B***	***17***	***0.37***	***-***	***B***	***17***	***0.43***	***-***
Perth Mews Mall Access/ Wilson Street *Signalized*	EB	Left	D	37	0.11	8	D	37	0.23	14
		Right	D	36	0.05	12	D	36	0.13	19
	NB	Left	A	2	0.14	5	A	3	0.25	12
		Thru	A	3	0.27	22	A	3	0.31	33
	SB	Thru-Thru/Right	A	6	0.22	23	A	6	0.18	23
	Overall Intersection		***A***	***7***	***0.27***	***-***	***B***	***10***	***0.32***	***-***
Sunset Boulevard-Harris Street/ Wilson Street *Signalized*	EB	Left/Thru	C	34	0.50	24	C	34	0.54	33
		Right	C	30	0.09	13	C	29	0.09	14
	WB	Left/Thru/Right	C	31	0.26	19	C	30	0.28	22
	NB	Left	A	5	0.23	11	A	6	0.21	10
		Thru/Right	A	10	0.37	50	B	13	0.58	101
	SB	Left	A	6	0.01	2	A	7	0.03	2
		Thru	B	12	0.49	76	B	14	0.57	101
		Right	A	8	0.03	1	A	8	0.02	< 1
	Overall Intersection		***B***	***15***	***0.46***	***-***	***B***	***17***	***0.55***	***-***
	EB	Left/Thru/Right	C	28	0.39	19	C	32	0.61	35

Intersection	Approach/Movement		A.M. Peak Hour				P.M. Peak Hour			
			LOS	Delay	v/c	Q	LOS	Delay	v/c	Q
Leslie Street-Isabella Street/ Wilson Street *Signalized*	WB	Left/Thru/Right	C	27	0.23	14	C	26	0.28	23
	NB	Left	A	6	0.00	< 1	A	8	0.01	1
		Thru/Right	B	12	0.49	57	B	15	0.58	92
	SB	Left	A	5	0.04	3	A	7	0.07	5
		Thru/Right	B	14	0.64	83	B	19	0.74	136
	Overall Intersection		***B***	***15***	***0.53***	**-**	***B***	***19***	***0.64***	**-**
North Street/ Wilson Street *Unsignalized*	EB	Left/Thru/Right	C	20	0.09	2	C	22	0.12	3
	WB	Left/Thru	D	27	0.07	2	D	34	0.09	2
		Right	B	12	0.14	4	B	13	0.18	5
	NB	Left/Thru/Right	A	< 1	0.01	< 1	A	< 1	0.01	< 1
	SB	Left	A	9	0.09	2	A	9	0.09	2
		Thru/Right	Unopposed Movement							
North Street/ Gore Street *Unsignalized*	EB	Left/Thru	B	11	0.11	3	B	13	0.19	5
		Right	Unopposed Movement							
	WB	Left/Thru/Right	B	13	0.15	4	C	19	0.34	11
	NB	Left/Thru/Right	A	0.03	2	1	A	3	0.06	2
	SB	Left/Thru/Right	A	1	0.01	< 1	A	1	0.01	< 1
North Street/ Drummond Street *4-Way Stop*	EB	Left/Thru/Right	B	11	0.21	-	B	11	0.21	-
	WB	Left/Thru/Right	B	11	0.32	-	B	12	0.38	-
	NB	Left/Thru/Right	B	11	0.35	-	B	13	0.45	-
	SB	Left/Thru/Right	B	13	0.44	-	B	15	0.53	-
Peter Street-Foster Street/ Wilson Street *Signalized*	EB	Left/Thru/Right	C	29	0.62	33	C	28	0.60	34
	WB	Left/Thru	C	22	0.10	9	C	22	0.18	14
		Right	B	15	0.15	8	B	15	0.17	9
	NB	Left/Thru/Right	A	9	0.05	10	B	10	0.13	20
	SB	Left	A	5	0.29	23	A	5	0.36	29
		Thru/Right	A	5	0.14	10	A	5	0.15	12
	Overall Intersection		***B***	***12***	***0.34***	**-**	***B***	***12***	***0.37***	**-**
Foster Street/ Gore Street *Signalized*	EB	Left/Thru	C	25	0.24	13	C	24	0.21	12
		Right	B	18	0.15	11	B	18	0.23	13
	WB	Left/Thru/Right	C	24	0.18	10	C	25	0.30	16
	NB	Left	A	3	0.24	11	A	3	0.27	14
		Thru/Right	A	3	0.16	11	A	3	0.16	12
	SB	Left/Thru/Right	A	8	0.17	19	A	8	0.20	24
	Overall Intersection		***A***	***10***	***0.26***	**-**	***B***	***11***	***0.29***	**-**
Foster Street/ Drummond Street *Unsignalized*	EB	Left/Thru/Right	B	14	0.11	3	C	16	0.18	5
	WB	Left/Thru/Right	B	12	0.05	1	B	14	0.13	3
	NB	Left/Thru/Right	A	1	0.02	< 1	A	1	0.02	< 1
	SB	Left/Thru/Right	A	< 1	0.01	< 1	A	1	0.01	< 1
	EB	Left/Thru/Right	B	12	0.07	2	C	16	0.22	7

Intersection	Approach/Movement		A.M. Peak Hour				P.M. Peak Hour			
			LOS	Delay	v/c	Q	LOS	Delay	v/c	Q
Herriott Street/ Gore Street *Unsignalized*	WB	Left/Thru/Right	C	18	0.08	2	C	20	0.11	3
	NB	Left/Thru/Right	A	1	0.02	1	A	1	0.04	1
	SB	Left/Thru/Right	A	1	0.03	1	A	1	0.02	< 1
Craig Street/ Gore Street *Signalized*	EB	Left/Thru/Right	B	19	0.54	28	B	17	0.32	17
	WB	Left/Thru	B	18	0.36	19	B	18	0.45	22
		Right	B	16	0.05	6	B	16	0.08	9
	NB	Left/Thru	B	15	0.58	62	B	13	0.45	47
		Right	A	9	0.06	7	A	9	0.05	5
	SB	Left	A	5	0.13	7	A	5	0.15	8
		Thru/Right	A	6	0.28	24	A	7	0.38	39
	Overall Intersection		***B***	***13***	***0.51***	**-**	***B***	***11***	***0.43***	**-**
Craig Street/ Riverside Drive *Unsignalized*	EB	Thru/Right	Unopposed Movement							
	WB	Left/Thru	A	< 1	0.01	< 1	A	< 1	0.01	< 1
	NB	Left/Right	B	12	0.03	1	B	12	0.07	2
Craig Street/ Chetwynd Street *Unsignalized*	EB	Left/Thru	A	1	0.01	< 1	A	1	0.01	< 1
	WB	Thru	Unopposed Movement							
		Right	Unopposed Movement							
	SB	Left/Right	B	14	0.22	6	B	15	0.27	8
South Street/ Rideau Ferry Road-Gore Street *Signalized*	EB	Left	C	23	0.34	25	C	22	0.39	32
		Thru/Right	C	22	0.17	18	C	21	0.18	20
	WB	Left	C	33	0.20	12	D	38	0.54	28
		Thru/Right	C	35	0.41	25	C	33	0.29	23
	NB	Left	A	8	0.11	11	A	10	0.12	10
		Thru/Right	A	9	0.25	38	B	10	0.20	32
	SB	Left	B	13	0.02	5	B	14	0.02	5
		Thru/Right	B	16	0.31	41	B	20	0.48	75
	Overall Intersection		***B***	***17***	***0.33***	**-**	***C***	***20***	***0.45***	**-**

All intersections and movements operate at acceptable levels of service and within capacity.

4.3.4 Traffic Signal Coordination

Travel time and delay surveys were conducted on Wednesday, October 8, 2014 from 7:00-9:00 a.m. and 4:00-6:00 p.m. using the test vehicle method and applying the average-car technique. These surveys were completed using a vehicle equipped with a GPS tracking unit to record time and position in one second intervals with the driver travelling at the average speed of the traffic stream based on his/her judgment. The surveys allow for an assessment of the delay encountered by drivers along a route and assist in determining the need to adjust the timing and coordination of traffic signals to lessen the delay.

These surveys were conducted along Gore Street, Foster Street, and Wilson Street between South Street and Dufferin Street/Highway 7 in both directions.

The results of the northbound travel time and delay surveys during the a.m. peak period are shown graphically in **Figure 6**. In these graphs, time in seconds is plotted along the x-axis, and the distance travelled in metres is plotted along the y-axis. Each coloured line represents a separate run by the survey vehicle. The greater (steeper) the slope of the line, the faster the vehicle speed, whereas when the line is horizontal, it means the vehicle has stopped moving and delay is incurred (e.g. a vehicle is stopped at a red light and time is passing, but no distance is being travelled).

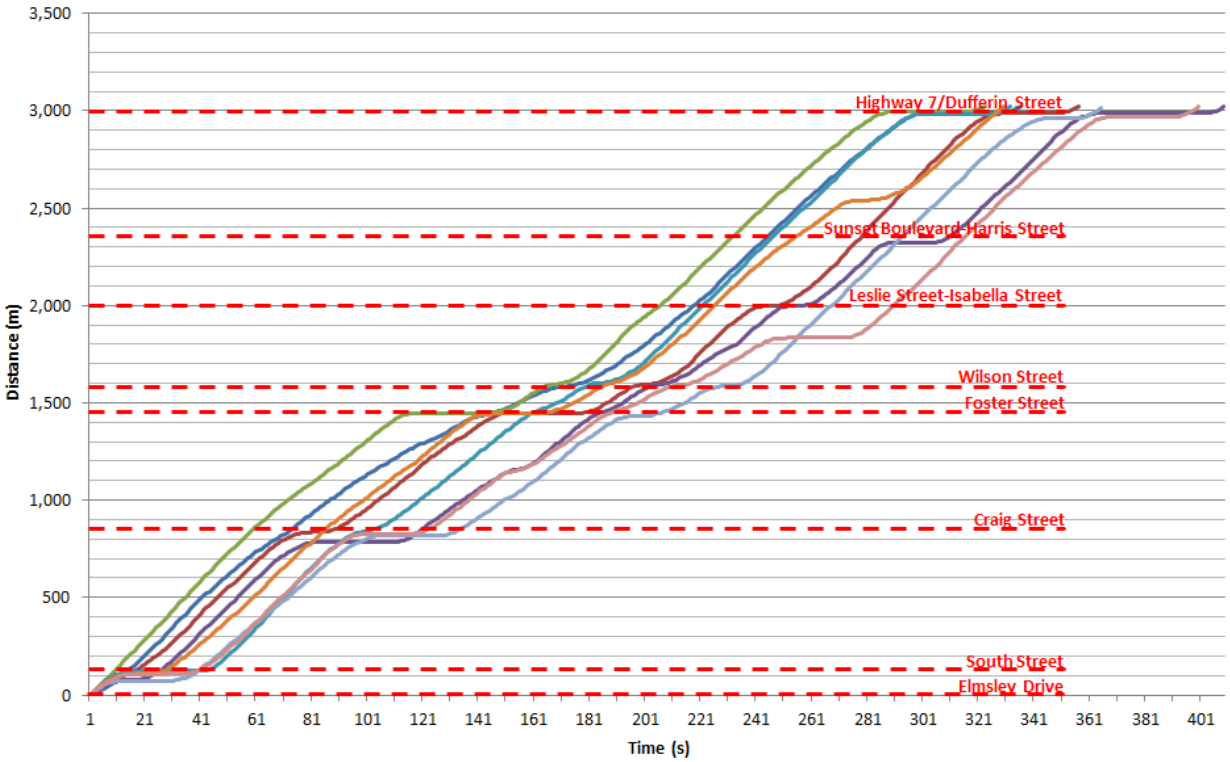


Figure 6 - AM Peak Period, Northbound

The results of the southbound travel time and delay surveys during the a.m. peak period are shown graphically in **Figure 7**.

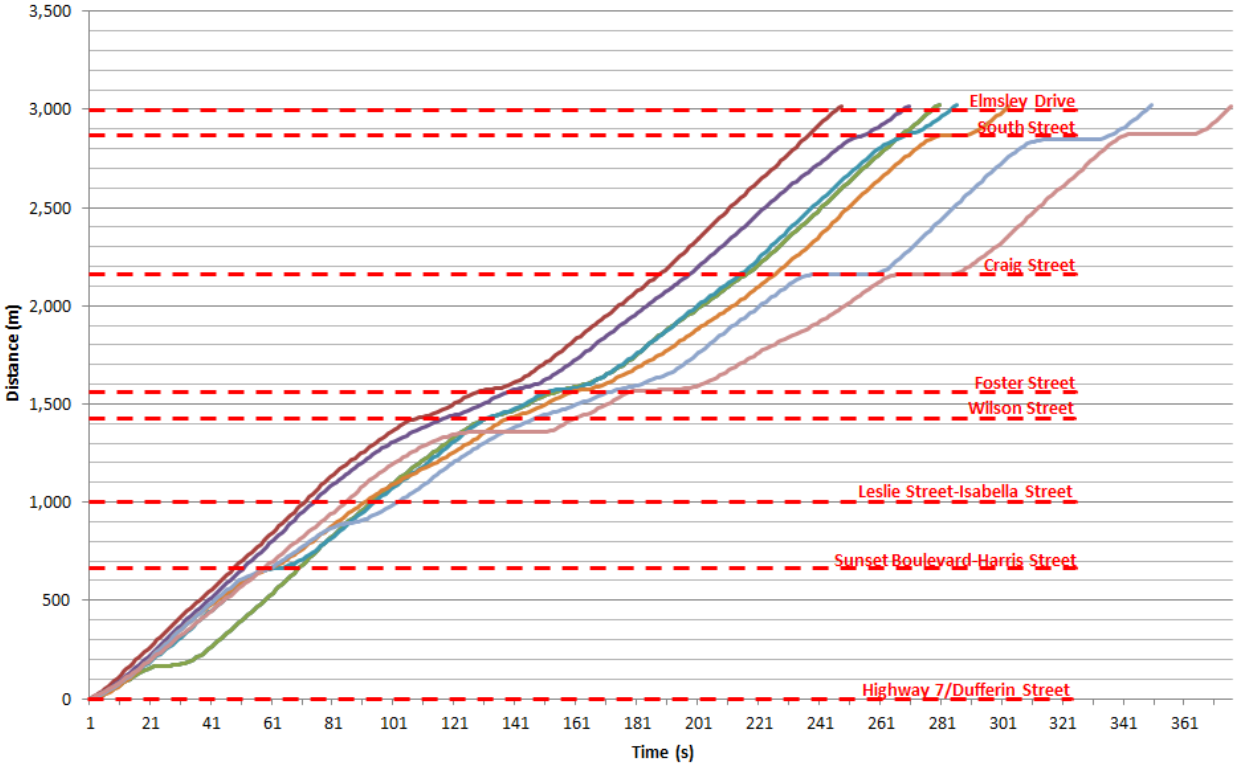


Figure 7 - AM Peak Period, Southbound

The results of the northbound travel time and delay surveys during the p.m. peak period are shown graphically in **Figure 8**.

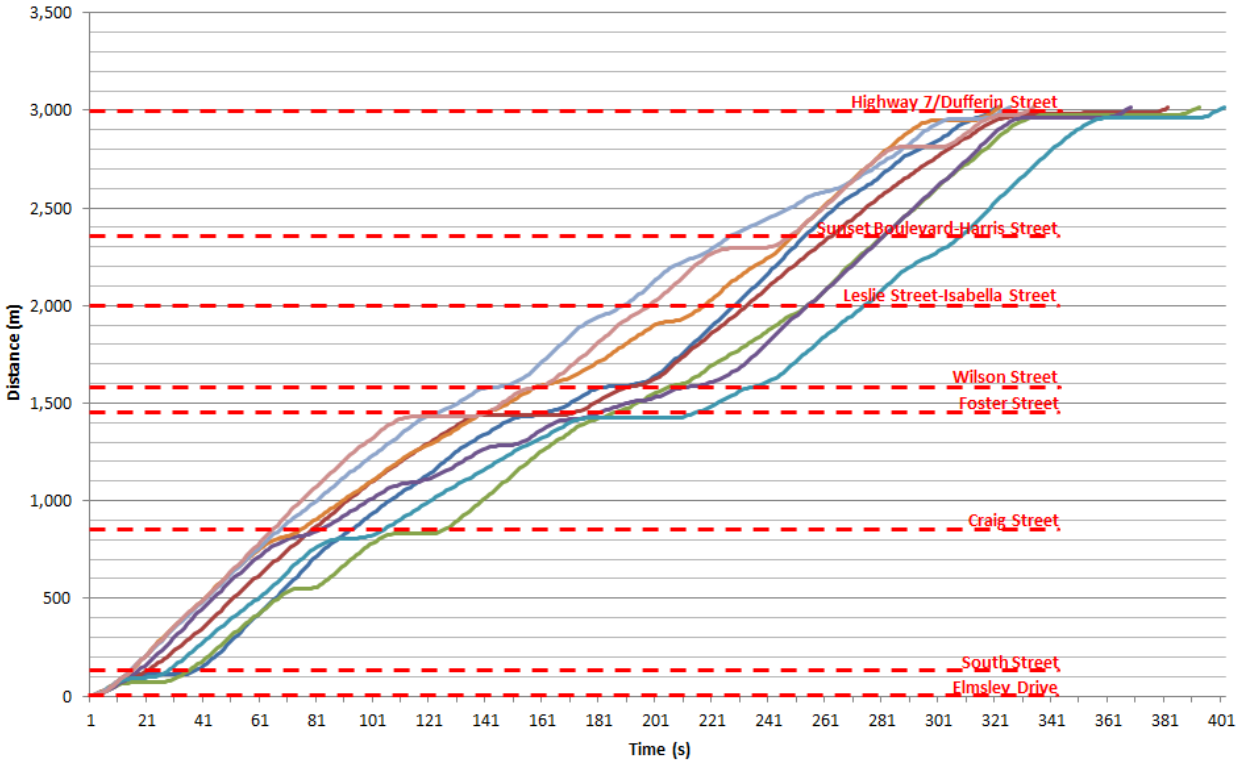


Figure 8 - PM Peak Period, Northbound

The results of the southbound travel time and delay surveys during the p.m. peak period are shown graphically in **Figure 9**.

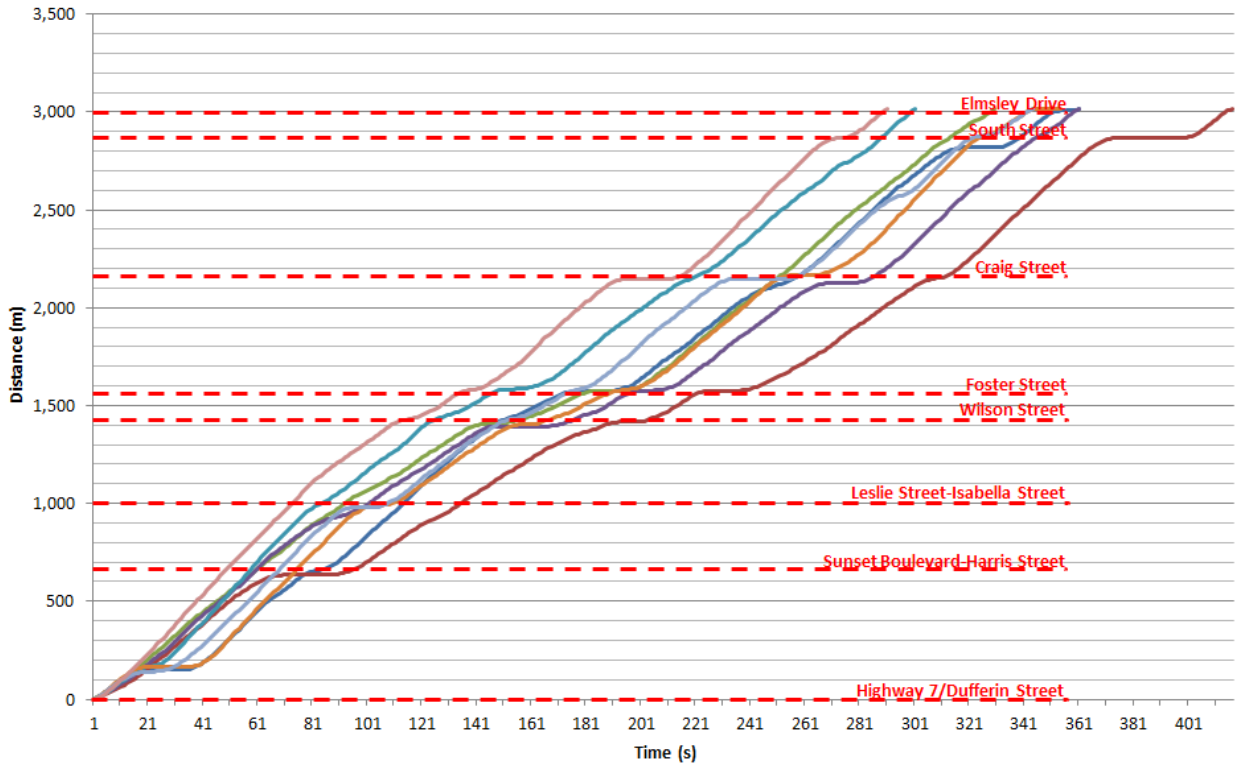


Figure 9 - PM Peak Period, Southbound

In general, it appears that while drivers do not experience substantial delays along this route, the coordination between signals could be improved. There is an opportunity to adjust the traffic signal timing and coordination to make moderate reductions in delay and corresponding improvements in efficiency.

4.3.5 Truck Activity

Based on a review of the 8-hour truck volumes:

- 30-40% of trucks to/from Wilson Street travel along North Street, the remaining 60-70% of trucks travel along Gore Street;
- 20-30% of trucks to/from Wilson Street travel along Foster Street despite North Street being the truck route; and
- Slightly less than half of trucks to/from Craig Street/CR 43 use Craig Street despite Chetwynd Street being the truck route.

The intersection of North Street and Wilson Street is challenging for trucks to navigate despite it being part of the designated truck route to Wilson Street and Dufferin Street/Highway 7. Westbound vehicles on North Street often need to wait several car lengths back from the stop bar

to allow a truck to complete their turning movement. In other cases, vehicles need to reverse, travelling in the wrong direction to provide adequate space for a turning truck. There are opportunities to improve the transportation network to better accommodate trucks and goods movement.

4.4 SAFETY REVIEW

4.4.1 Collision History

The intersections of Drummond Street at Craig Street, Gore Street at North Street, and North Street at Wilson Street have been identified by the Town for a safety review. The only collision data available was the total number of annual collisions from the 2009, 2010 and 2011 Perth Police Service Annual Reports. A summary of this information is shown in **Table 9**.

Table 9 - Number of Reported Collisions

Intersection	2009	2010	2011
Drummond Street at Craig Street	8	6	11
Gore Street at North Street	-[1]	2	-[3]
North Street at Wilson Street	-[1]	-[2]	4

[1]Not in the top 10 collision intersections in Town in 2009 (5 collisions or less)
[2]Not in the top 20 collision intersections in Town in 2010 (2 collisions or less)
[3]Not in the top 12 collision intersections in Town in 2011 (3 collisions or less)

Unfortunately, given the limited nature of the collision information provided, it is not possible to draw conclusions on the safety performance of these intersections on this alone. However, observations of traffic operations and driver behavior were conducted in September 2014 during the p.m. peak hour at these intersections and are detailed below.

4.4.1.1 Drummond Street at Craig Street

Key observations at this intersection include:

- Vehicles making the westbound right-turn movement often make their movement at a higher rate of speed and a few vehicles were observed to encroach into the southbound lane. However, when southbound vehicles were queued and waiting to turn, this behavior was not observed;
- Due to the vertical curve, the view of southbound vehicles by eastbound and westbound vehicles is somewhat restricted. This limitation on visibility would be further exacerbated in the winter with snow storage on the boulevard;
- The sight triangles on the northwest and southwest quadrants is limited; and
- Due to the proximity of residential driveways along Craig Street, it may be easy to confuse a parked vehicle with a vehicle waiting to make a southbound or northbound movement.

This intersection is typical of many downtown environments with minimal building setbacks limiting the available sight triangles, numerous vehicle turning movements, on-street parking activity and

crossing pedestrians. For many drivers, this intersection may be the transition point as the first or last intersection from which they are under some form of intersection control and a low speed urban environment, to a higher speed rural environment. Vehicles travelling at higher rates of speed coupled with the limited sight distances may create the perception of a challenging intersection to navigate although no conflicts or near collisions were observed.

4.4.1.2 Gore Street at North Street

Key observations at this intersection include:

- Approach lanes in the northbound and southbound directions on Gore Street are quite wide due to the presence of on-street parking;
- Crosswalk lines are painted on all approaches but only the eastbound and westbound approaches on North Street are under control;
- Sight triangles on the southwest, southeast and northwest quadrants of the intersection are limited;
- On a few occasions, southbound vehicles at the Gore Street at Foster Street intersection were observed to queue back to the intersection of Gore Street at North Street;
- Large trucks making the eastbound right-turn movement encroach into the northbound approach; and
- Although no vehicles were observed to enter/exit the carwash in the northwest quadrant of the intersection, the access driveways are extremely close to the intersection.

This complex driving environment coupled with the limited sight distances may create the perception of a challenging intersection to navigate although no conflicts or near collisions were observed.

4.4.1.3 North Street at Wilson Street

Key observations at this intersection include:

- The gas station in the northeast quadrant has 2 accesses to North Street near the intersection;
- The sight triangles on the southwest and southeast quadrants is limited;
- Vehicles in the southbound direction often drive straight through the left-turn lane in order to enter the left-turn lane at the downstream intersection of Wilson Street at Foster Street; and
- Large commercial trucks making the southbound left-turn and westbound right-turn movements often encroach into the adjacent lanes.

It is likely that the presence of large commercial trucks and occasional lane encroachments create the perception of an unsafe intersection to drivers although no conflicts or near collisions were observed.

4.4.2 Vehicle Speeds

The average speed and 85th percentile speed (the speed at which 85% of all vehicles are travelling slower than) are shown for the seven ATR locations in **Table 10**.

Table 10 - Vehicle Speeds

Location	Dir.	Posted Speed	Average Speed	85th Percentile Speed
Craig Street/CR 43 between Provost Street and Irwin Street	EB	50 km/h	66 km/h	76 km/h
	WB	50 km/h	63 km/h	72 km/h
Gore Street between Herriott Street and Market Square/Basin Street	NB	50 km/h	35 km/h	45 km/h
	SB	50 km/h	36 km/h	45 km/h
North Street/CR 10 between Sherbrooke Street E and Beckwith Street W	EB	50 km/h	47 km/h	56 km/h
	WB	50 km/h	44 km/h	53 km/h
Drummond Street W between Harris Street N/S and Perkins Boulevard	NB	50 km/h	51 km/h	59 km/h
	SB	50 km/h	47 km/h	56 km/h
Wilson Street W between Mather Street and Haggart Street	NB	50 km/h	49 km/h	57 km/h
	SB	50 km/h	52 km/h	60 km/h
Sunset Boulevard between Mather Street and George Avenue	EB	50 km/h	58 km/h	67 km/h
	WB	50 km/h	57 km/h	67 km/h
Rogers Road between South Street/CR 10 and Cockburn Street/Smith Drive	NB	50 km/h	56 km/h	66 km/h
	SB	50 km/h	60 km/h	69 km/h

The speeds shown are generally reasonable with low speeds within the downtown areas with urban cross-sections (curbs, sidewalks, etc.) and higher speeds for the roads with rural cross-sections (gravel shoulders, ditches, etc.) that connect to the transportation network beyond the Town's limits.

4.4.3 Rail Crossing

The number of trains crossing the Wilson Street at-grade rail crossing was observed for two separate 24-hour periods. A summary of the number of crossings, train times (24-hour clock), and blockage durations is shown in **Table 11**.

Table 11 - Wilson Street At-Grade Rail Crossing Trains

Date	No.	Time		Blockage Duration (min.)
		Gates Up	Gates Down	
Wednesday October 8, 2014	1	0:31	0:33	2
	2	1:57	1:58	1
	3	3:57	3:59	2
	4	4:58	4:59	1
	5	13:31	13:34	3
	6	13:48	13:49	1
	7	15:00	15:01	1
	8	15:33	15:36	3
	9	15:51	15:55	4
	10	17:11	17:13	2
	11	17:33	17:35	2
	12	22:10	22:13	3
	13	22:49	22:52	3
Thursday October 16, 2014	1	0:21	0:23	2
	2	1:57	1:58	1
	3	4:03	4:06	3
	4	7:17	7:20	3
	5	7:51	7:53	2
	6	8:55	8:55	<1
	7	14:56	14:58	2
	8	16:07	16:10	3
	9	17:03	17:05	2
	10	17:18	17:20	2
	11	18:10	18:12	2
	12	20:03	20:05	2

The exposure index at this crossing is calculated as 136,565 (10,505 vehicles per day X 13 trains). Typically, an exposure index threshold of 200,000 is used as a threshold for considering a grade-separated crossing. However, as recently experienced by the Town in December of 2013, a collision involving a train and a motor vehicle resulted in all three rail crossings being blocked. This prevented direct travel between the northern and southern parts of the Town, and separated the OPP on the north side from the fire department and hospital on the south side. The shortest alternative route for travel, including emergency services, requires a diversion of 7-10 km via Glen Tay Road or Drummond Concession 1.

Based on previous work completed by the Town, it is generally acknowledged that the Drummond Street and Wilson Street at-grade rail crossings will likely never become grade-separated due to the substantial property impacts and costs. There is an opportunity to investigate the provision of an alternative grade-separated crossing within the Town limits.

4.4.4 Schools

Observations of traffic operations at Upper Canada District School Board (UDSB) and Catholic District School Board of Eastern Ontario (CDBSEO) schools during the morning drop-off, lunch hour (Perth District Collegiate Institute and St. John High School only), and afternoon pick-up times were conducted in September and November of 2014. The following was noted:

Perth District Collegiate Institute (PDCI)

- Bus and student pick-up/drop-off activity was generally confined to the immediate school site, both behind the school and on Victoria Street;
- Some pedestrian activity, approximately 30-40 students walking to/from school;
- Peak activity occurred for a 15-minute period before the start of the school day (8:00 a.m.) and after the end of the school day (2:10 p.m.). Beyond these peak periods, vehicle and pedestrian activity was minimal; and
- As Victoria Street has minimal through traffic, no conflicts were observed between school-associated traffic and through traffic.

St. John Catholic High School

- Bus and student pick-up/drop-off activity was entirely contained on the school site;
- Peak activity occurred for a 15-minute period before the start of the school day (8:50 a.m.) and after the end of the school day (3:00 p.m.). Otherwise, vehicle and pedestrian activity was minimal;
- Virtually no pedestrian activity (1-2 students) was observed on South Street/Scotch Line, during the morning, lunch hour or afternoon;
- Students leaving the school during the lunch hour are primarily destined for the Conlon Farm area;
- In the morning peak 15 minutes, there was some queuing for vehicles making the northbound left turn onto the school site. Occasional and temporary queues were typically 3-4 vehicles, but experienced minimal delays in making their turn;
- Some vehicles were observed driving on the shoulder to bypass the northbound left-turn queue; and
- In the afternoon peak 15 minutes, the outbound queue from the school driveway was typically 9-10 vehicles, but there are sufficient gaps in the South Street/Scotch Line traffic to provide a good level of service and minimal delays for exiting traffic.

St. John Catholic Elementary School

- Peak activity occurred for a 15-minute period before the start of the school day (8:40 a.m.) and after the end of the school day (3:00 p.m.). Otherwise, vehicle and pedestrian activity was minimal;
- Bus and parent pick-up/drop-off activity was well separated on the west and east sides of the school, respectively; and

- Through traffic on Wilson Street and Arthur Street is relatively limited so school associated traffic does not impact traffic operations.

Stewart School

- Peak activity occurred for a 15-minute period before the start of the school day (9:05 a.m.) and after the end of the school day (3:25 p.m.). Otherwise, vehicle and pedestrian activity was minimal;
- Bus and parent pick-up/drop-off activity was well separated with buses using their designated queuing lane on the east side of the school, and parents parking in the school parking lot to the north of the school building;
- Bus arrivals and departures were observed to be well staggered such that the queuing on Wilson Street in the two-way left-turn lane did not extend back to the Wilson Street at Isabella Street/Leslie Street intersection;
- The intersection of Wilson Street at Sunset Boulevard was able to accommodate the surges of traffic due to pick-up/drop-off activity with vehicles able to clear the intersection in 1-2 cycles of the signal operation; and
- Vehicle traffic at the Perth and District Indoor Swimming Pool was minimal during school pick-up/drop-off times so no conflicts were observed between vehicles using these driveways.

Queen Elizabeth Public School

- Peak activity occurred for a 15-minute period before the start of the school day (8:50 a.m.) and after the end of the school day (3:10 p.m.). Otherwise, vehicle and pedestrian activity were minimal;
- Bus and parent pick-up/drop-off activity was well separated with buses on the west side of the school using Arthur Street, and parents using the drop-off area on Wilson Street; and
- In the afternoon, several parents were parked on the south side of Halton Street between Arthur Street and Wilson Street waiting to pick up their children due to the proximity of the school entrance. However, as through traffic on Halton Street is minimal, this was not observed to disrupt traffic operations.

There are opportunities for the Town to encourage the schools to increase the non-auto mode share for student and staff travel. This may include the initiation, or further development of Active and Safe Routes to Schools programs which include classroom activities and events (e.g. international walk to school day, winter walk day, etc.), and emergency ride home programs for staff.

There is an opportunity to reduce the potential for vehicle conflict at the St. John Catholic High School driveway.

4.4.5 Courtesy Crosswalks

The Town provides three courtesy crosswalks for the crossing of Gore Street in the downtown BIA area. They are located on the north and south sides of Gore Street at the Herriott Street intersection, and on the north side of Gore Street at the Basin Street intersection across from the Town's municipal office.

Courtesy crosswalk signage for drivers is provided at each of these crossings and appears to be custom-made to match other municipal information signs. The signage is oriented toward motorists or cyclists travelling along the roadway. There was no signage for pedestrians using the crosswalks during the initial study period, but cautionary signage for pedestrians regarding the "courtesy" status of the crosswalks was erected in mid-2016.

The crosswalks are well-used. Data collection over an eight-hour period from 9:00 a.m. to 5:00 p.m. on Tuesday, August 19, 2014, showed 414 pedestrian crossings at the Basin Street crosswalk, 388 pedestrian crossings at the south Herriott Street crosswalk, and 440 pedestrian crossings at the north Herriott Street crosswalk. Peak pedestrian activity tended to occur between 11 a.m. and 2 p.m., but was consistent over the observation period.

On Saturday August 23rd, 2014 from 8:00 a.m. to 5:00 p.m., there were 597 pedestrian crossings at the Basin Street crosswalk, 376 pedestrian crossings at the south Herriott Street crosswalk, and 453 pedestrian crossings at the north Herriott Street crosswalk. Peak pedestrian activity at the Basin Street crosswalk occurred between 10:45 a.m. to 11:45 a.m., while pedestrian activity at the Herriott Street crosswalks peaked between 12:45 p.m. to 1:45 p.m.

An informal pedestrian conflict study was undertaken to review the pedestrian crossings at the Herriott Street courtesy crosswalks in greater detail. On Friday August 22, 2014, from 10:30 a.m. to 2:30 p.m., 537 pedestrian crossings were observed at these two crosswalks. Of these crossings, 4 pedestrians (crossing as one group), and 1 vehicle had to make a sudden manoeuver to avoid conflict. These 5 potentially hazardous conflicting maneuvers represent 0.9% of the total crossings observed during this time period.

The overall impressions from these observations are that most drivers were courteous and the pedestrians were observant and cautious. Therefore, in the local context, and in consideration of the absence of pedestrian injuries/fatalities, it can be concluded that the courtesy crosswalks are providing the functionality that was intended without the expense of formal crosswalk right-of-way control that could be provided with traffic signals. The effectiveness of the courtesy crosswalks is also demonstrated by most pedestrians using the designated crossings during the day when traffic volumes are higher rather than randomly crossing mid-block at less visible locations (such as between parked cars). This concentration effect provides a "safety in numbers" benefit to pedestrians as well as enhancing driver expectations with respect to the likely locations of pedestrian activity.

Notwithstanding, there are a number of concerns with the current crosswalk operations. These include the visibility of the crossings, challenging sight lines, and signage that is inconsistent with other courtesy crossings in nearby municipalities as well as the Ontario Traffic Manuals. There were also driver and pedestrian behaviours observed that indicate a clear lack of understanding as to who legally has the right-of-way (per the *Ontario Highway Traffic Act*).

There is an opportunity to investigate enhancements to the existing courtesy crosswalks such as improved pavement markings and signage, curb extensions at crosswalk locations, raised crossings, additional public education, and/or traffic control modifications.

4.5 ACTIVE TRANSPORTATION

4.5.1 Overview

The Town of Perth has many advantages from an active transportation (walking and cycling) perspective. The Town's small geographic size, connected street network, and relatively mixed land uses with many services and amenities allow for short, direct trips to local destinations. This contributes to an environment where active transportation is a viable travel option. Beautiful parks and natural open spaces, relatively flat terrain, and heritage architecture make it a very attractive place to walk and cycle for recreational as well as utilitarian purposes.

Perth is situated in Lanark County, which is a popular Ontario destination for recreational cycling. Several regional recreational cycling routes that travel through the centre of the town are widely promoted. For the most part, these routes are shared with motor vehicles on roadways that are without dedicated cycling facilities.

Several local and regional organizations are actively involved in the development of recreational cycling routes and/or the promotion of active transportation in the Town of Perth. These include Lanark County Tourism, Lanark County Tourism Association (developing the first Cycling Map for Lanark County for 2015), Perth Tourism, Perth Chamber of Commerce and the Perth Business Improvement Area.

Cycling events pass through the town each year including the Rideau Lakes Tour, which brings approximately 500-800 cyclists into the town over 2 days, and the Gran Fondo Ottawa Tour. The town also hosts triathlons and other local events such as the Kilt Run.

The Town of Perth has five types of existing facilities for walking and cycling, which include:

- Sidewalks (concrete);
- Boulevard multi-use trail (asphalt);
- Off-road multi-use trail (dirt or granular surface);
- On-street bicycle lane; and
- Public roadways (except for provincial highways).

Sidewalks

The Town maintains a sidewalk network, however, there are gaps in this network, particularly on local residential streets. Narrow and discontinuous sidewalks can present a challenge for pedestrians, particularly the elderly, young children, and those with visual or mobility impairments.

In terms of their use, the Town prohibits bicycles, roller skates, skateboards and inline skates on sidewalks, per Traffic Parking By-law 3961, Sec 11 – Clauses 6 and 7.

Multi-Use Trails

Trails such as the Trans Canada Trail, Rideau Trail, and the Tay River trail (including the Tow Path) pass through the Town and can be easily accessed from local streets. Local and regional groups promote the trails which are highly valued by residents and visitors. The trails provide diverse environments for walking and/or cycling and include local, collector, and arterial roads as well as County roads (Trans Canada Trail), unpaved pathways through green spaces (Tow Path, park and riverside trails), and provide varying levels of access to users. Uneven surfaces, narrow trail widths and narrow and/or steep bridges present potential barriers for some uses as well as users.

In addition, the Town has a short multi-use trail providing pedestrian and bicycle access in the north boulevard of Craig Street (County Road #43) between Chetwynd Street and Algonquin College / Provost Street.

Bicycle Lanes

There is one on-street bicycle lane in the Town of Perth on Wilson Street West between Harris Street and Boulton Street on the east side (northbound) and Harris Street to Leslie Street on the west side (southbound). While this facility appears to be working well from the Town's perspective, local cyclists have expressed concerns about the short length of the facility and their lack of comfort particularly at the transition point where the bicycle lane ends and they must continue in a shared lane with motor vehicle traffic.

4.5.2 Problems and Opportunities

Pedestrians and cyclists are complex user groups that represent a very wide range of ages, abilities and comfort levels. Facilities that are comfortable for one set of users may not be adequate for others. Conditions for cycling and walking in the Town of Perth are relatively comfortable for experienced users, however sharing the roadway with motor vehicles introduces concerns about comfort and safety for more vulnerable pedestrians and cyclists such as children, the elderly, or those with less experience.

Some cyclists are riding on sidewalks in the Town creating uncomfortable conditions for pedestrians and potentially dangerous conditions at driveways and intersections. Gore Street, Wilson Street and Drummond Street. are preferred by cyclists because they provide direct and

continuous connections through the Town. These streets, as well as Highway 7 / Dufferin Street, and Sunset Boulevard may be busier, less comfortable routes for pedestrians and cyclists, however they provide important access to community services and destinations.

An opportunity exists for the Town to provide a network of on-road and off-road active transportation routes and facilities to promote and support cycling and walking for local trips, support recreational opportunities for residents, and encourage more bicycle tourism in the Town. Network development opportunities include expanding existing trails and integrating these trails with the street network to provide additional access along the Tay River and in areas of new development; developing more sidewalks and bicycle facilities to create connected pedestrian and bicycle networks that will provide access to key community destinations; and providing wayfinding and end of trip facilities such as bicycle parking.

Opportunities exist for improving accessibility on existing trails where surface conditions, trail width, crossings and narrow or steep bridges may limit access to some users. Trail crossings at intersecting roadways also present barriers or challenges to trail users.

A footpath extending south from the intersection of Isabella Street and Garden Avenue shows potential opportunity to improve connectivity to local roads and provide a north-south route for pedestrians and cyclists on the east side of the town.

Based on the Official Plan, the Secondary Plan for North of Highway 7 and the Wilson Street Gateway design report, an opportunity for a safer, more welcoming pedestrian environment along the Highway 7 corridor, in particular, the creation of sidewalk connections between the new neighbourhood. Consistency with the Official Plan policy of a sidewalk on at least one side of local through streets would be appropriate.

4.6 PARKING

4.6.1 Downtown Parking

Parking within the Business Improvement Area (BIA) is provided through a mixture of on-street and municipal off-street parking. Two hours of complimentary parking (within 5 hours of the initial time of parking) is provided, Monday through Saturday from 9 a.m. to 5 p.m. by the BIA. Parking in the municipal off-street lots requires a nominal payment. This results in the somewhat unusual situation where more convenient on-street parking is free (or at least appears to be) and less convenient off-street parking requires payment.

Parking surveys were completed on Tuesday, August 19th from 9 a.m. to 5 p.m., and on Saturday, August 23rd from 8 a.m. to 5 p.m. in 30 minute intervals for public parking in the BIA area. Parking occupancy and duration was recorded for the on-street sections, while only occupancy was recorded for the 5 off-street municipal lots (Wilson Street, Code's Mill, Museum, Chamber of Commerce, and Tay Basin).

A summary of the peak parking occupancy is shown in **Table 12** and visualised in **Figure 10**. A parking lot or section of on-street parking is generally considered to be at capacity when it reaches 85% occupancy (indicated in red below). However, the need for additional parking depends on the capacity of adjacent parking areas within walking distance to the major destinations.

Table 12 - Parking Occupancy

Day	Parking Type	Spaces	Overall Peak Occupancy	
			Vehicles	Percentage
Weekday	On-Street	227	175	77%
	Off-Street	257	142	55%
	Total	**484**	**317**	**65%**
Saturday	On-Street	227	194	87%
	Off-Street	257	160	67%
	Total	**484**	**354**	**73%**

The weekday peak parking occupancy of 65% overall occurred between 1:00 and 1:30 p.m. The weekend peak parking occupancy of 73% also occurred between 1:00 and 1:30 p.m. For both the weekday and Saturday, there are numerous sections of on-street parking that have temporary parking demands above the typical 85% threshold capacity, or even above 100% capacity (i.e. including vehicles parked in spaces not designated for parking). However, at the same time there is parking available in the nearby municipal off-street parking lots. Similarly, there are individual municipal lots or roadway sections that may have higher individual parking occupancies at different times of the day, while parking capacity is available in nearby facilities. Therefore, the focus of the parking analysis is on the overall peak demand period within the BIA for all facilities combined.

A summary of the average on-street parking duration is shown in **Table 13**.

Table 13 - On-Street Parking Duration

Day	Average Duration
Weekday	45 minutes/vehicle
Saturday	57 minutes/vehicle

These durations indicate that there is good turnover and on-street parking spaces are being used appropriately for short-term parking, well within the 2-hour limit.

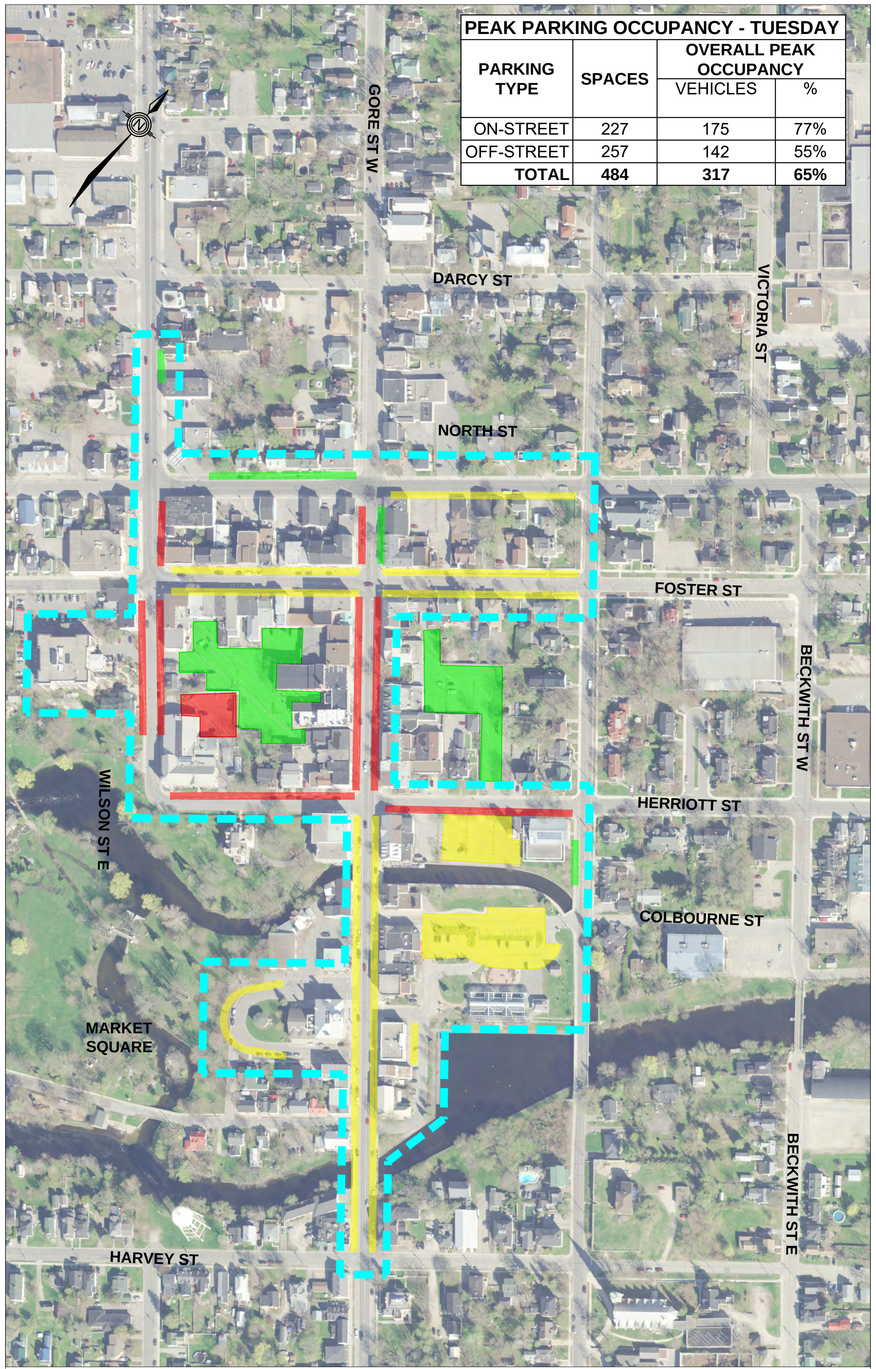
It should also be noted that during the parking data collection, portions of Market Square were blocked off on Saturday afternoon for a wedding, Gore Street between North Street and D'Arcy Street was closed all day for a police investigation (beyond the parking study area), and Mill Street west of Gore Street was closed for reconstruction (also beyond the parking study area). However, these activities were not observed to have a significant impact on parking activity.

Detailed breakdowns of parking occupancy and duration by road location and parking lot are attached in **Appendix B**.

In addition to utilization rates, all the off-street parking lots are within a reasonable 3-4 minutes walking distance of any point within the BIA as can be seen in **Figure 11**.

Since field surveys were undertaken Town staff have advised that as a result of a recent development inquiry and other discussions involving the area around Wilson Street and Foster Street, concerns have been brought up regarding parking supply. Specifically, the new ownership of the Best Western Hotel has been expanding its service offerings to the general public (vs its overnight guests) and has an interest in broadening its services further. However, the Hotel was developed with parking based on services solely for clients staying in the facility. The larger commercial building across from the hotel on the north westerly corner of the intersection has found its reuse/ redevelopment potential constrained because of very limited on-site parking, and lost use of the municipal parking lot that was formerly leased on part of the site now occupied by the hotel. In addition, a couple of commercial building occupancies have changed from relatively low client attending businesses to more high traffic businesses.

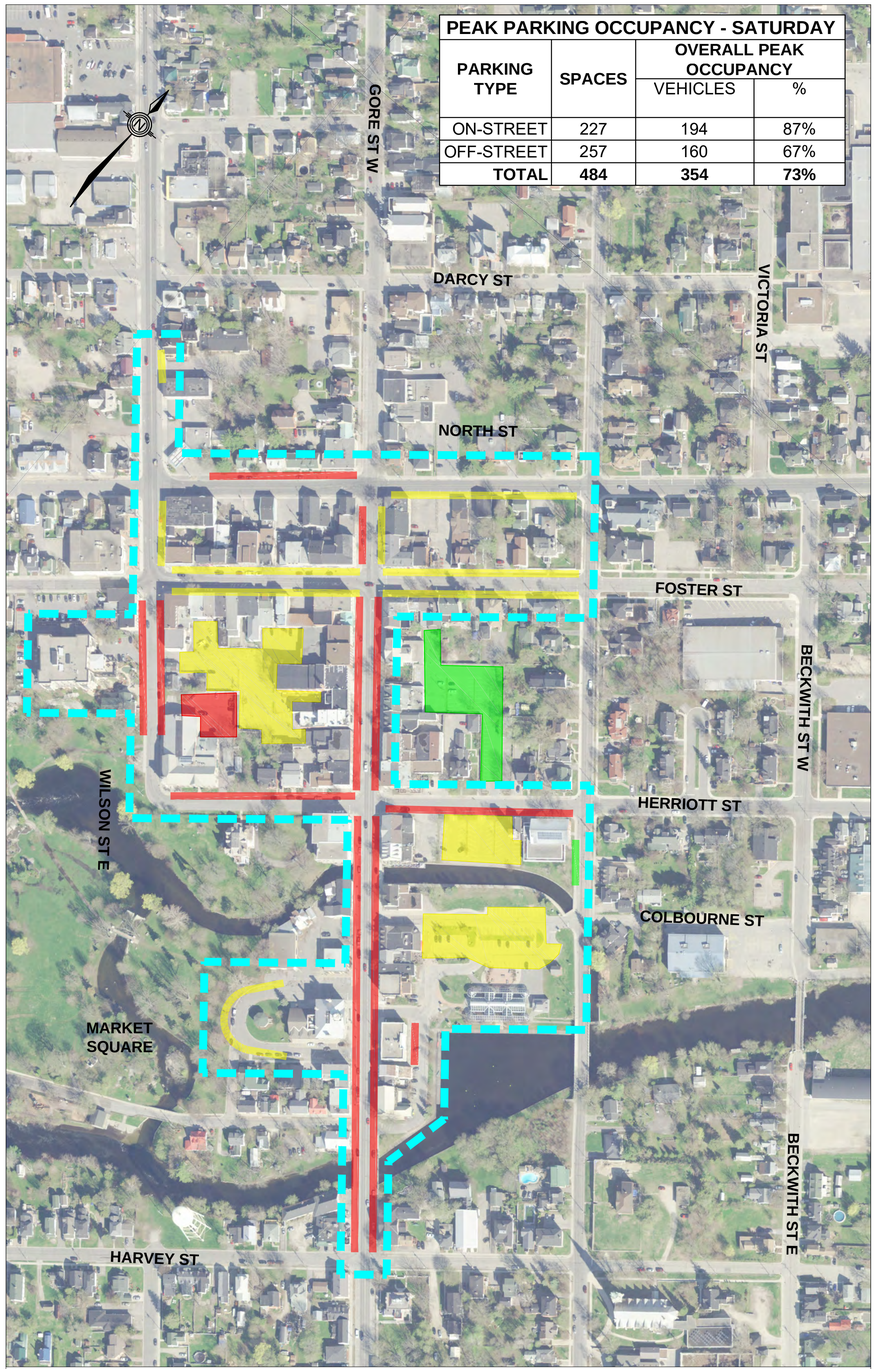
Based on our analysis preceding these events, the area was found to have sufficient parking available through the combination of on-street and off-street lots for the BIA during typical summer weekday and weekend parking demands. However, considering this new information, there is a concern that related land-use changes and alteration of services in the area around Wilson Street and Foster Street, that were previously unknown, there may be insufficient parking supply. A further parking analysis to address these concerns either as part of a development application or as a standalone study would be required to confirm this.



PEAK PARKING OCCUPANCY - TUESDAY			
PARKING TYPE	SPACES	OVERALL PEAK OCCUPANCY	
		VEHICLES	%
ON-STREET	227	175	77%
OFF-STREET	257	142	55%
TOTAL	**484**	**317**	**65%**

PEAK PARKING OCCUPANCY:

TUESDAY, AUGUST 19, 2014



PEAK PARKING OCCUPANCY - SATURDAY			
PARKING TYPE	SPACES	OVERALL PEAK OCCUPANCY	
		VEHICLES	%
ON-STREET	227	194	87%
OFF-STREET	257	160	67%
TOTAL	**484**	**354**	**73%**

PEAK PARKING OCCUPANCY

SATURDAY, AUGUST 24, 2014

LEGEND

- 0-49% OCCUPANCY*
- 50-84% OCCUPANCY*
- 85%+ OCCUPANCY*
- BUSINESS IMPROVEMENT AREA (BIA)

*OCCUPANCY IS THE PERCENTAGE OF THE PARKING SUPPLY OCCUPIED BY PARKED VEHICLES. A PARKING FACILITY IS GENERALLY CONSIDERED TO BE AT CAPACITY AT AN OCCUPANCY OF 85% OR GREATER.

NOTES:

1. THE PEAK PARKING OCCUPANCY CCURRED BETWEEN 1:00PM AND 1:30PM FOR BOTH TUESDAY AND SATURDAY.
2. THE AVERAGE WEEKDAY PARKING DURATION IS 45 MINUTES PER VEHICLE.
3. THE AVERAGE SATURDAY PARKING DURATION IS 57 MINUTES PER VEHICLE.

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision		By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS	SK	CS	15.02.02
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

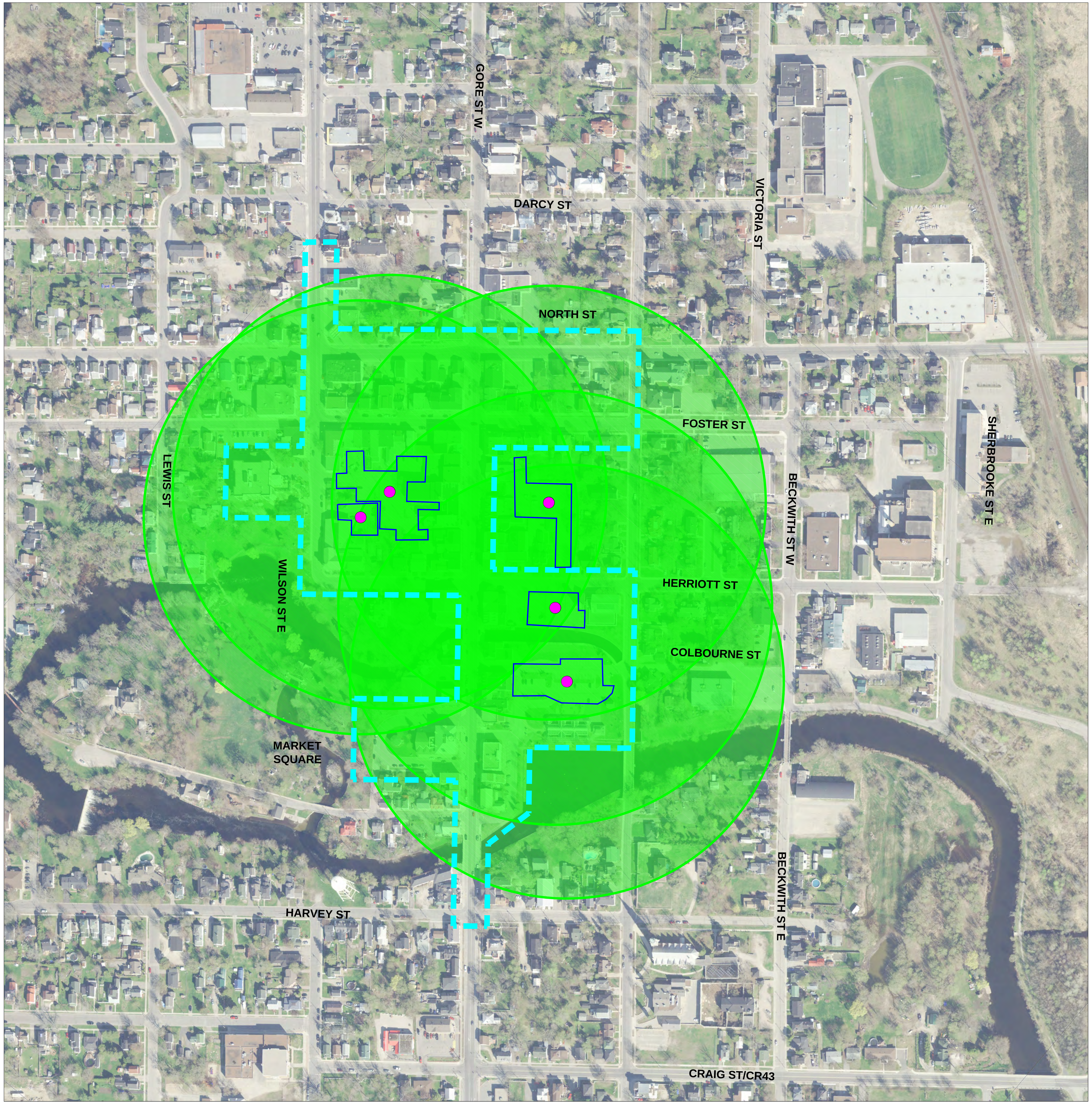
Permit-Seal

Client/Project
The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title
FIGURE 10
OVERALL STUDY AREA
PEAK PARKING OCCUPANCY

Project No.	Scale	
165000919	1:2000	
Drawing No.	Sheet	Revision
10	1of 1	0



LEGEND

- BUSINESS IMPROVEMENT AREA
- OFF-STREET PARKING LOT
- 200m RADIUS = 3-4 MINUTE WALK FROM OFF-STREET PARKING LOT
- OFF-STREET PARKING FACILITY

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD

File Name: fig_00919_20160526_report.dwg	CS	SK	CS	15.02.02
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 11
PARKING PROXIMITY

Project No.	Scale	
165000919	1:2000	
Drawing No.	Sheet	Revision
11	of	0

4.7 CONCLUSIONS, PROBLEMS, AND OPPORTUNITIES

The following conclusions, problems and opportunities have been identified:

a) There is an opportunity to develop a Transportation Vision, Goals and Objectives for the Town of Perth that follows from policies in the Town of Perth Official Plan and Strategic Plan and incorporates feedback from the public and stakeholders. The Vision will provide the context for the development of policies, strategies and recommendations that will help the Town to improve the safety and efficiency of motor vehicle circulation and increase the use of active transportation modes while accommodating projected demands on the transportation system due to population growth.

b) Traffic volumes on some roadways within the Town of Perth have experienced little change from the 1990 volumes. However, traffic volumes on roadways to/from destinations outside of Perth have increased, particularly to the east and south. There is a lack of north-south arterial roadway connectivity between Dufferin Street and Craig Street. There are opportunities to improve the connectivity of the transportation network to these destinations.

c) Existing (2014) fall traffic volumes are well within the capacity of their respective roadways. However, it is understood that summer traffic volumes are typically higher.

d) The Study Area intersections operate at acceptable levels of service and well within capacity.

e) There are opportunities to improve the traffic signal coordination within the Town to achieve modest reductions in delay.

f) Some trucks continue to use Gore Street and Foster Street rather than the alternative signed routes that are available. The intersection of North Street and Wilson Street is challenging for trucks to navigate despite being it being part of an identified truck route. There are opportunities to improve the transportation network to better accommodate trucks and goods movement.

g) The at-grade rail crossings within the Town experience 12-13 trains per day with average blockage duration of 2 minutes. Due to the length of trains, there is the potential for a stopped train to block multiple at-grade crossings in the Town simultaneously, which results in isolating residents and emergency services on their respective sides of the rail line and requiring a lengthy detour. There is an opportunity to investigate the provision of a grade-separated rail crossing to mitigate this risk.

h) From a traffic perspective, the schools operate well with minimal conflicts between bus and parent student pick-up/drop-off, and between school-generated traffic and through traffic. However, there is an opportunity to lessen vehicular traffic generated by the schools by encouraging the use of non-auto modes of travel for staff and students. As well, there is an opportunity to reduce vehicle conflicts at the St. John Catholic High School driveway.

i) The pedestrian courtesy crossings on Gore Street within the BIA are well used and are generally functioning as intended. Notwithstanding, there is an opportunity to investigate enhancements to the existing courtesy crosswalks. In addition, requests from members of the public to consider new locations for courtesy crosswalks have been referred to the Transportation Master Plan Study. These locations include Drummond Street West at Mary Street near the hospital, Drummond Street West at Daines Place/Haggart Street, and Wilson Street at Boulton Street. There is an opportunity to investigate options to improve pedestrian crossing conditions at these locations.

j) There are opportunities to improve the operational performance of the intersections reviewed for safety.

k) There is an opportunity to identify and establish a network of on-road and off-road active transportation routes and to establish policies and recommendations that will promote and support cycling and walking for local trips and recreation for residents, and will encourage more bicycle tourism in the Town.

l) There is sufficient parking for the observed typical summer weekday and Saturday parking demand within the BIA overall. Vehicles parked on-street are typically parked for one hour or less, which is consistent with the current regulations (2-hour limit) and a desirable level of turnover for a downtown commercial area is realized. There are opportunities to improve the usage of municipal off-street parking lots, which in turn should reduce illegal on-street parking.

5.0 TRAFFIC FORECAST

In this sections, the future traffic conditions on the Town's road network are forecast. Based on a review of the historical traffic growth in the technical memo titled *Existing Conditions Assessment, January 29, 2015*, many roadways have experienced little to no change in traffic volumes. Given the Town's size and location, additional traffic on municipal roadways would primarily be associated with new developments. Consequently, no background growth rate has been applied and changes to the existing traffic volumes are a result of the build-out of potential development areas and changes to the transportation network.

5.1 FUTURE DEVELOPABLE AREAS

The *Growth Management Strategy – Town of Perth, February 20, 2014 Study* projected the following changes from 2011 to 2041:

- Population increase from 5,860 to 10,500 (+4,640);
- Increase in households (residential units) from 2,950 to 5,016 (+2,066); and
- Employment increase from 6,010 to 10,552 (+4,542).

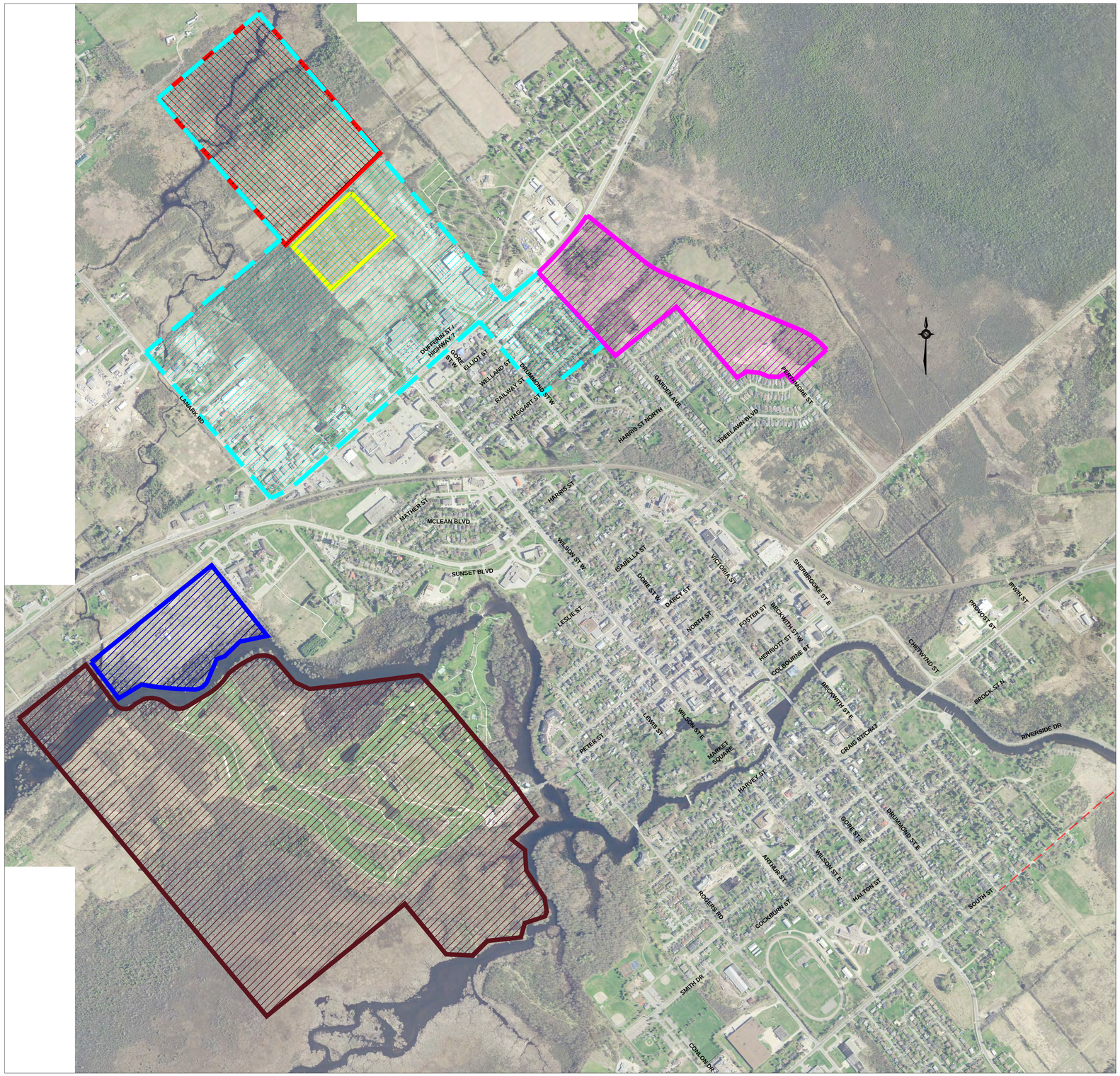
These 2041 population and employment projections are not consistent with the growth assigned to the Town by Lanark County's Official Plan (OP), which the Town is subject to. In 2009, certain lands from the Township of Tay Valley and the Township of Drummond North Elmsley were annexed by the Town and these projections assumed that all the annexed lands would be designated for growth.

As part of an Ontario Municipal Board (OMB) settlement with the County, a portion of the annexed lands known as the Poole lands have been designated as a Special Study Area and located outside of the settlement area boundary. This will be subject to further review when the County undergoes its OP update, expected in 2017. However, for the purposes of this Study, and to identify the highest traffic demand, full build-out of all these lands has been assumed.

The development areas are shown in **Figure 12** and comprise:

- Perthmore Glen subdivision (400 residential units);
- Lands North of Highway 7 (615 residential units and 122,000 m^2 gross floor area of retail, business park, and institutional land uses;
- Golf Club lands (650 residential units); and
- Tayview lands (180 residential units).

As there is no yearly background traffic growth rate, and the uncertainty associated with when these development areas would be built-out, no specific horizon year has been attributed to the future traffic forecasts. Due to their sensitivity to local market conditions, these areas could build-out in the short-term (less than 5 years), or might remain dormant up to and beyond 2041.



LEGEND

- GOLF CLUB
- TAYVIEW
- BROWNLEE
- POOLE LANDS
- INFRASTRUCTURE MASTER PLAN STUDY AREA
- PERTHMORE GLEN

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision		By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	MC	SK	MC	15.09.09
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the
Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 12
DEVELOPMENT AREAS

Project No.	Scale	
165000919	1:7500	
Drawing No.	Sheet	Revision
12	of	0

5.2 TRIP GENERATION

The number of auto trips generated for the lands north of Highway 7 are taken from the *Infrastructure Master Plan for Area North of Highway 7, October 2013 Report*. Both internal trip capture and pass-by trip reductions are applied to these trips. For the other residential lands, trips are estimated for the a.m. and p.m. peak hours using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*. No reductions are applied to these trips. A summary of the trip generation is shown in **Table 14**.

Table 14 - Trip Generation

Name	Land Use	Size	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Lands North of Highway 7	Mixed[1]	Mixed[1]	1,005	757	1,762	1,861	1,870	3,731
Perthmore Glen	Residential[2]	400 units	72	217	289	219	129	348
Golf Club Lands	Residential[2]	650 units	116	349	465	339	199	538
Tayview Lands	Residential[2]	180 units	34	102	136	107	63	170
Total			**1,227**	**1,425**	**2,652**	**2,526**	**2,261**	**4,787**

[1]*Infrastructure Master Plan for Area North of Highway 7, October 2013*

[2]*ITE LUC 210, Single-Family Detached Housing, ITE Trip Generation Manual, 9th Edition*

5.3 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution for trips within, to, and from the Perth area in the following studies was reviewed along with the most recent traffic data:

- Town of Perth Transportation Study Report, January 1991;
- Town of Perth Arterial Roadway Municipal Class EA Study, Environmental Study Report, June 2008; and
- Infrastructure Master Plan for Area North of Highway 7, October 2013.

The resulting trip generation is shown in **Table 15**.

Table 15 - Trip Distribution

To/From	Percentage
West on Highway 7	15%
East on Highway 7	10%
North Street/CR 10	15%
Craig Street/CR 34	25%
Sunset Boulevard	10%
South Street/Scotch Line	10%
Rideau Ferry Road/CR 1	15%

The site traffic was assigned to the road network based on the most logical route available. It is assumed that the New Arterial Road (NAR) will be constructed at the time of full development build-out and will be used by the new development site traffic. As shown in the approved Class EA Study, the NAR will have connections to Highway 7, North Street, Craig Street, Chetwynd Street as well as additional local streets. Existing traffic that would reasonably use this roadway are also moved to this route.

The site traffic assignments detailed in the *Infrastructure Master Plan for Area North of Highway 7, October 2013 Report* were applied for the associated site trips and expanded to encompass the subject Study road network. It is assumed that the Perthmore Glen development would have connections to Perth Arterial Road, the Tayview Lands to Sunset Boulevard, and the Golf Club Lands to Sunset Boulevard and Peter Street.

The resulting future traffic forecasts and the resulting differences in Intersection volumes are shown in **Table 16**.

Table 16 - Future Traffic Conditions 2041 - Volume Growth Analysis

Intersection	A.M. Peak Hour				P.M. Peak Hour			
	Existing Volumes	Forecast Volumes	Diff.	%	Existing Volumes	Forecast Volumes	Diff.	%
Highway 7/Perth Mews Mall Access (signalized)	1,154	2,195	1,041	90%	1,379	3,083	1,704	124%
Highway 7/Wilson St (signalized)	1,394	2,618	1,224	88%	1,624	3,429	1,805	111%
Highway 7/Drummond St (signalized)	1,180	2,121	941	80%	1,307	2,714	1,407	108%
Perth Mews Mall Access/Wilson St (signalized)	936	1,529	593	63%	1,261	2,141	880	70%
Sunset Boulevard-Harris St/Wilson St (signalized)	1,174	1,886	712	61%	1,584	2,610	1,026	65%
Leslie St-Isabella St/Wilson St (signalized)	1,065	1,470	405	38%	1,433	2,033	600	42%
North St/Wilson St (unsignalized)	540	742	202	37%	661	981	320	48%
North St/Gore St (unsignalized)	372	353	(19)	-5%	542	518	(24)	-4%
North St/Drummond St (4-Way Stop)	756	885	129	17%	927	1,096	169	18%
Peter St-Foster St/Wilson St (signalized)	843	1,360	517	61%	1,090	1,821	731	67%
Foster St/Gore St (signalized)	830	1,333	503	61%	1,041	1,758	717	69%
Foster St/Drummond St (unsignalized)	504	733	229	45%	667	960	293	44%
Herriott St/Gore St (unsignalized)	860	1,270	410	48%	1,057	1,666	609	58%
Craig St/Gore St (signalized)	1,122	1,574	452	40%	1,227	1,924	697	57%
Craig St/Riverside Drive (unsignalized)	222	332	110	50%	295	411	116	39%
Craig St/New Arterial Road (unsignalized)	345	614	269	78%	341	604	263	77%
South St/Rideau Ferry Road-Gore St (signalized)	865	1,487	622	72%	1,002	1,893	891	89%
New Arterial Road/ Chetwynd St (unsignalized)	N/A	291	N/A	N/A	N/A	439	N/A	N/A
New Arterial Road/North St (unsignalized)	N/A	837	N/A	N/A	N/A	999	N/A	N/A
New Arterial Road/Highway 7 (signalized)	N/A	1,519	N/A	N/A	N/A	2,100	N/A	N/A

5.4 TRAFFIC ANALYSIS

In addition to the construction of the NAR, it is assumed that the recommendations of the MTO *Highway 7 Preliminary Design and Environmental Assessment Study* will be implemented which includes:

- At the intersection of Highway 7 at Drummond Street, auxiliary left-turn lanes on the eastbound and westbound approaches;
- At the intersection of Highway 7 at Wilson Street, auxiliary right and left-turn lanes on the eastbound and westbound approaches; and
- At the intersection of Highway 7 at the Perth Mews Access, auxiliary left-turn lanes on the eastbound, westbound and southbound approaches.

This analysis is intended to identify the combined impact of the build-out of the development areas and the greater network requirements. It is not intended to replace the need for individual traffic impact studies for these developments. Details such as the specific location and design of the accesses to the existing road network will require further study once development plans and timing are better defined. The results of the analysis are shown in **Table 17** and a visual representation of future intersection LOS' in Perth can be viewed in **Figure 13**.

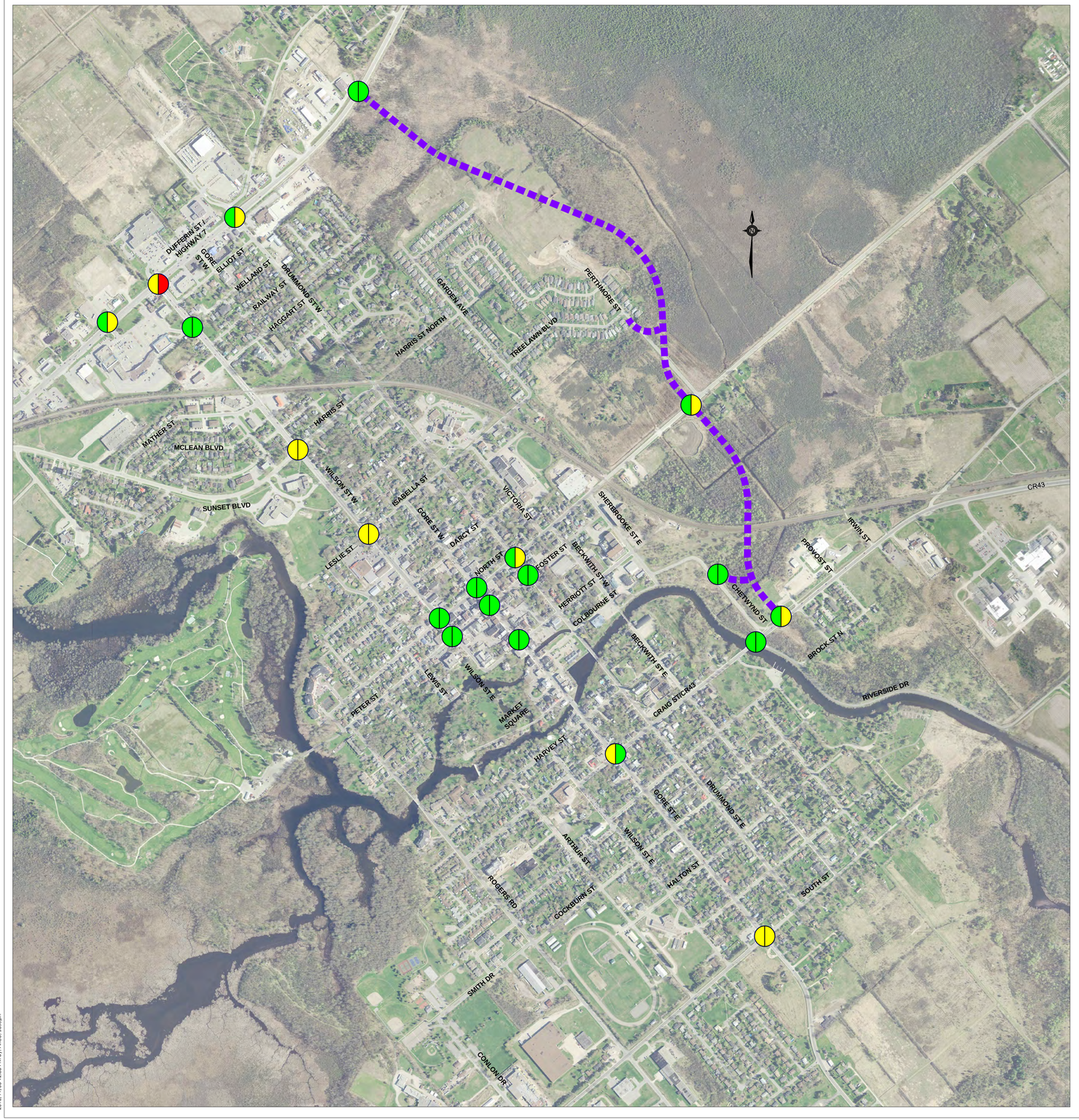
Table 17 - Future Traffic Conditions 2041 - Peak Hour Level of Service Analysis

Intersect.	Approach/ Movement		A.M. Peak Hour						P.M. Peak Hour					
			Existing Vol	Forecast Vol	LOS	Delay	v/c	Q	Existing Vol	Forecast Vol	LOS	Delay	v/c	Q
Highway 7/ Perth Mews Mall Access *Signalized*	EB	Left	0	90	B	12	0.30	19	0	205	C	150	0.74	44
		Thru-Thru	644	918	B	13	0.55	68	469	751	B	17	0.51	68
		Right	32	62	A	9	0.04	5	77	122	B	13	0.10	11
	WB	Left	21	51	A	5	0.12	5	58	113	A	8	0.27	14
		Thru-Thru/Right	435	862	A	6	0.41	39	607	1184	C	12	0.79	126
	NB	Left/Thru	11	41	C	31	0.24	15	124	174	D	49	0.81	61
		Right	11	31	C	29	0.02	3	44	84	C	25	0.06	11
	SB	Left	0	70	C	32	0.39	22	0	230	D	54	0.86	77
		Thru/Right	0	70	C	29	0.07	11	0	220	C	28	0.17	19
	Overall Intersection		***1154***	***2195***	***B***	***11***	***0.50***	***-***	***1379***	***3083***	***C***	***25***	***0.80***	***-***
Highway 7/ Wilson Street *Signalized*	EB	Left	22	77	C	21	0.27	21	22	82	C	33	0.46	27
		Thru-Thru	313	537	C	22	0.45	52	287	686	C	32	0.72	77
		Right	298	353	C	21	0.29	21	216	284	C	26	0.34	35
	WB	Left	127	188	B	15	0.52	29	150	279	F	101	1.08	79
		Thru-Thru	267	579	B	16	0.40	47	357	779	C	23	0.58	74
		Right	6	26	B	12	0.02	1	1	21	B	16	0.01	<1
	NB	Left/Thru	200	455	E	76	1.03	152	299	659	F	218	1.40	232
		Right	91	183	B	18	0.13	13	152	254	B	15	0.18	13
	SB	Left/Thru	41	181	C	27	0.43	47	91	316	C	128	0.68	78
		Right	29	39	C	24	0.03	<1	49	69	B	19	0.05	6
	Overall Intersection		***1394***	***2618***	***C***	***29***	***0.60***	***-***	***1624***	***3429***	***E***	***69***	***0.83***	***-***
Highway 7/ Drummond Street *Signalized*	EB	Left	57	92	B	13	0.24	22	49	139	B	18	0.43	32
		Thru-Thru/Right	379	660	B	14	0.44	55	452	868	B	16	0.55	73
	WB	Left	93	96	A	7	0.22	13	97	95	A	9	0.29	12
		Thru-Thru	201	479	A	7	0.25	30	258	679	A	9	0.37	43
		Right	23	108	A	6	0.08	6	17	127	A	7	0.09	7
	NB	Left	166	163	D	50	0.80	53	186	189	E	69	0.91	72
		Thru/Right	156	223	C	30	0.54	50	124	203	C	28	0.43	46
	SB	Left	13	108	C	35	0.61	34	19	174	D	40	0.72	57
		Thru/Right	92	192	C	29	0.42	37	105	240	C	29	0.49	52
	Overall Intersection		***1180***	***2121***	***B***	***19***	***0.52***	***-***	***1307***	***2714***	***C***	***21***	***0.65***	***-***
Perth Mews Mall Access/ Wilson Street Signalized	EB	Left	13	13	D	37	0.11	8	34	34	D	37	0.23	14
		Right	69	69	D	36	0.05	12	198	198	D	36	0.13	19
	NB	Left	89	89	A	2	0.18	5	192	192	A	3	0.37	12
		Thru	322	670	A	5	0.56	62	434	897	A	7	0.65	105
	SB	Thru-Thru/Right	443	688	A	6	0.34	37	403	820	A	8	0.37	50
	Overall Intersection		***936***	***1529***	***A***	***7***	***0.54***	***-***	***1261***	***2141***	***A***	***10***	***0.63***	***-***
Sunset Boulevard-Harris Street/ Wilson Street *Signalized*	EB	Left/Thru	72	249	D	54	0.88	84	110	326	E	73	0.97	115
		Right	111	179	C	24	0.14	14	135	176	C	25	0.12	15
	WB	Left/Thru/Right	62	84	C	25	0.18	22	87	100	C	26	0.19	24
	NB	Left	117	140	B	16	0.55	21	97	167	F	100	1.04	60
		Thru/Right	336	513	D	21	0.67	111	573	842	D	45	0.97	235
	SB	Left	7	7	B	11	0.02	2	13	13	B	19	0.09	3
		Thru	426	562	D	24	0.73	128	538	758	D	35	0.90	204
		Right	43	152	B	13	0.11	9	31	228	B	13	0.15	11
	Overall Intersection		***1174***	***1886***	***C***	***26***	***0.77***	***-***	***1584***	***2610***	***D***	***44***	***1.03***	***-***
Leslie Street-Isabella Street/ Wilson Street *Signalized*	EB	Left/Thru/Right	65	65	C	28	0.39	19	128	128	D	39	0.67	38
	WB	Left/Thru/Right	74	74	C	27	0.23	14	129	129	C	29	0.29	24
	NB	Left	1	1	A	9	0.00	<1	2	2	B	14	0.01	1
		Thru/Right	384	584	B	17	0.74	105	498	837	C	24	0.87	215
	SB	Left	21	21	A	6	0.06	3	30	30	B	12	0.16	5
		Thru/Right	520	725	C	26	0.89	163	646	907	C	32	0.94	242

Intersect.	Approach/ Movement		A.M. Peak Hour						P.M. Peak Hour					
			Existing Vol	Forecast Vol	LOS	Delay	v/c	Q	Existing Vol	Forecast Vol	LOS	Delay	v/c	Q
	Overall Intersection		***1065***	***1470***	***C***	***23***	***0.72***	***-***	***1433***	***2033***	***C***	***29***	***0.83***	***-***
North Street/ Wilson Street *Unsignalized*	EB	Left/Thru/Right	20	20	F	58	0.26	7	28	28	F	287	0.86	23
	WB	Left/Thru	10	10	F	97	0.22	6	11	11	F	369	0.61	13
		Right	71	50	C	15	0.14	4	98	93	C	19	0.28	9
	NB	Left/Thru/Right	358	579	A	<1	0.01	<1	434	778	A	1	0.02	<1
	SB	Left	81	83	B	10	0.12	3	90	71	B	10	0.10	3
		Thru/Right	Unopposed Movement											
North Street/ Gore Street *Unsignalized*	EB	Left/Thru	56	58	B	11	0.11	3	74	55	B	13	0.14	4
		Right	Unopposed Movement											
	WB	Left/Thru/Right	77	56	B	12	0.11	3	129	124	C	18	0.32	10
	NB	Left/Thru/Right	145	145	A	2	0.03	<1	214	214	A	3	0.06	2
	SB	Left/Thru/Right	94	94	A	1	0.01	<1	125	125	A	1	0.01	< 1
North Street/ Drummond Street *4-Way Stop*	EB	Left/Thru/Right	110	112	B	11	0.27	-	112	93	B	12	0.20	-
	WB	Left/Thru/Right	183	162	B	12	0.36	-	223	227	B	14	0.44	-
	NB	Left/Thru/Right	207	309	B	15	0.57	-	269	386	C	20	0.67	-
	SB	Left/Thru/Right	256	302	C	15	0.57	-	323	390	C	21	0.68	-
Peter Street- Foster Street/ Wilson Street *Signalized*	EB	Left/Thru/Right	144	224	C	32	0.73	51	157	201	C	30	0.68	44
	WB	Left/Thru	30	53	C	21	0.14	14	56	124	C	23	0.33	27
		Right	214	425	B	12	0.31	7	245	583	B	12	0.39	10
	NB	Left/Thru/Right	45	45	B	15	0.07	12	110	110	B	16	0.17	23
	SB	Left	242	441	A	8	0.55	62	326	597	A	9	0.66	76
		Thru/Right	168	172	A	6	0.15	13	196	206	A	5	0.16	14
	Overall Intersection		***843***	***1360***	***B***	***14***	***0.56***	***-***	***1090***	***1821***	***B***	***13***	***0.60***	***-***
#Foster Street/ Gore Street *Signalized*	EB	Left/Thru	44	114	C	26	0.46	26	41	81	C	24	0.30	20
		Right	215	414	B	14	0.28	10	328	599	B	14	0.58	25
	WB	Left/Thru/Right	37	60	C	24	0.23	15	68	136	C	26	0.50	30
	NB	Left	215	426	A	5	0.49	33	234	572	A	7	0.66	53
		Thru/Right	176	176	A	4	0.16	14	193	193	A	4	0.17	16
	SB	Left/Thru/Right	143	143	B	12	0.22	28	177	177	B	16	0.30	36
	Overall Intersection		***830***	***1333***	***B***	***11***	***0.51***	***-***	***1041***	***1758***	***B***	***12***	***0.68***	***-***
Foster Street/ Drummond Street *Unsignalized*	EB	Left/Thru/Right	44	114	C	18	0.31	10	71	111	D	26	0.42	15
	WB	Left/Thru/Right	22	22	B	15	0.06	2	58	58	C	19	0.20	6
	NB	Left/Thru/Right	235	323	A	1	0.03	<1	288	430	A	2	0.06	1
	SB	Left/Thru/Right	203	274	A	<1	0.01	<1	250	361	A	< 1	0.01	< 1
Herriott Street/ Gore Street *Unsignalized*	EB	Left/Thru/Right	35	35	C	16	0.10	3	93	93	D	33	0.42	15
	WB	Left/Thru/Right	21	21	D	32	0.15	4	30	30	F	51	0.28	8
	NB	Left/Thru/Right	438	649	A	<1	0.03	<1	460	798	A	1	0.05	1
	SB	Left/Thru/Right	366	565	A	<1	0.03	<1	474	745	A	1	0.02	1
Craig Street/ Gore Street *Signalized*	EB	Left/Thru/Right	177	147	B	19	0.52	28	120	120	B	17	0.31	18
	WB	Left/Thru	103	157	C	21	0.59	29	123	155	C	20	0.55	28
		Right	64	32	B	15	0.02	1	115	58	B	16	0.04	5
	NB	Left/Thru	365	608	D	40	0.96	129	313	709	C	22	0.86	129
		Right	81	99	A	9	0.08	8	63	118	A	7	0.09	7
	SB	Left	65	33	A	7	0.11	4	94	47	A	7	0.18	5
		Thru/Right	267	498	A	9	0.57	59	399	717	B	11	0.69	90
	Overall Intersection		***1122***	***1574***	***C***	***23***	***0.78***	***-***	***1227***	***1924***	***B***	***16***	***0.75***	***-***
Craig St/ Riverside Dr *Unsignalized*	EB	Thru/Right	Unopposed Movement											
	WB	Left/Thru	208	318	A	<1	0.01	<1	259	375	A	< 1	0.01	< 1
	NB	Left/Right	14	14	B	14	0.04	<1	36	36	B	14	0.09	2
Craig St/ New Arterial Road *Unsignalized*	EB	Left/Thru	245	334	A	1	0.03	<1	222	335	A	2	0.07	2
	WB	Thru	Unopposed Movement											
		Right	Unopposed Movement											
	SB	Left/Right	100	280	D	35	0.75	47	119	269	F	64	0.91	69
	EB	Left	114	220	C	25	0.58	47	145	328	F	107	1.09	108

Intersect.	Approach/ Movement		A.M. Peak Hour						P.M. Peak Hour					
			Existing Vol	Forecast Vol	LOS	Delay	v/c	Q	Existing Vol	Forecast Vol	LOS	Delay	v/c	Q
South Street/ Rideau Ferry Road-Gore Street *Signalized*		Thru/Right	102	154	C	21	0.20	20	127	157	C	25	0.24	27
	WB	Left	27	27	C	35	0.21	12	81	81	D	40	0.56	29
		Thru/Right	81	81	D	36	0.42	25	71	71	C	35	0.29	23
	NB	Left	62	79	B	12	0.25	13	48	99	B	16	0.53	15
		Thru/Right	249	407	B	12	0.43	66	188	461	B	11	0.46	77
	SB	Left	11	11	B	14	0.03	5	10	10	B	10	0.03	4
		Thru/Right	219	508	C	32	0.81	143	332	686	C	26	0.82	186
	Overall Intersection		***865***	***1487***	***C***	***23***	***0.71***	**-**	***1002***	***1893***	***D***	***37***	***0.93***	**-**
New Arterial Rd/ Chetwynd St *Unsignalized*	EB	Left/Right	-	105	B	10	0.14	4	-	124	B	10	0.16	4
	NB	Left/Thru	-	186	A	4	0.06	2	-	315	A	3	0.07	2
	SB	Thru/Right	Unopposed Movement											
New Arterial Road/ North Street *Unsignalized*	EB	Left/Thru/Right	-	188	C	24	0.53	22	-	145	D	32	0.54	23
	WB	Left/Thru/Right	-	233	C	18	0.48	20	-	328	E	38	0.80	55
	NB	Left/Thru/Right	-	115	A	1	0.01	<1	-	231	A	1	0.02	1
	SB	Left/Thru/Right	-	301	A	4	0.10	3	-	295	A	5	0.12	3
New Arterial Road/ Highway 7 *Signalized*	EB	Thru-Thru/Right	-	676	B	17	0.49	48	-	1000	B	12	0.59	53
	WB	Left/Thru-Thru	-	573	B	18	0.57	47	-	773	B	16	0.75	56
	NB	Left	-	180	B	15	0.27	30	-	230	C	22	0.50	42
		Right	-	90	B	13	0.06	8	-	97	B	16	0.07	9
	Overall Intersection		**-**	***1519***	***B***	***17***	***0.42***	**-**	**-**	***2100***	***B***	***15***	***0.66***	**-**

v/c equal to or greater than 0.85 for overall intersections / through movements / shared through movements, and LOS F are highlighted (if any).



LEGEND

NEW ARTERIAL ROAD CORRIDOR

AM | PM — INTERSECTION LEVEL OF SERVICE (LOS) FOR THE WEEKDAY AM AND PM PEAK PERIODS

GREEN - LOS 'A' OR 'B'

YELLOW - LOS 'C' OR 'D'

RED - LOS 'E' OR 'F'

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision		By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS Dwn.	SK Chkd.	CS Dsgn.	15.02.02 YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 13
INTERSECTION OPERATIONS
FUTURE 2041 WITH NEW ARTERIAL ROAD

Project No.	Scale	
165000919	1:3000	
Drawing No.	Sheet	Revision
13	of	0

5.5 CONCLUSIONS

Based on the preceding technical analysis, the following conclusions have been reached:

a) The assumed growth for 2041 equals to about 1,850 residential units and 122,000 m2 gross floor area of retail, business park, and institutional land uses. Therefore, the expected increase in traffic of over 2,500 new trips added to the transportation network in the A.M. Peak hours and over 4,700 new trips added in the P.M. Peak. The most significant increases in traffic during peak hours are expected to be centered around the corridors of Highway 7 (±100%), Wilson Street (±50%) and the Craig/New Arterial Road combination (±50%).

b) The operational analysis indicates that there are few concerns under the anticipated future A.M. peak hour for the Study Area network intersections with only 2 intersection movements showing a LOS F:

   - North Street/ Wilson Street Eastbound Left/Thru/Right (LOS F, v/c 0.26);
   - North Street/ Wilson Street Westbound Left/Thru (LOS F, v/c 0.22).

   No Study Area intersections had an overall intersection LOS worse than C and are shown to operate at acceptable levels of service and within capacity.

c) The analysis indicates there will be capacity and potential queuing issues under the P.M. peak hour with several intersections anticipated to have movements observing a LOS F and approaching or at capacity:

   - Highway 7/Wilson Street Westbound Left (LOS F, v/c 1.08);
   - Highway 7/Wilson Street Northbound Left/Thru (LOS F, v/c 1.40);
   - Sunset Boulevard-Harris Street/ Wilson Street Northbound Left (LOS F, v/c 1.04);
   - North Street/ Wilson Street Eastbound Left/Thru/Right (LOS F, v/c 0.86);
   - North Street/ Wilson Street Westbound Left/Thru (LOS F, v/c 0.61);
   - Herriott Street/ Gore Street Westbound Left/Thru/Right (LOS F, v/c 0.28);
   - Craig Street/ New Arterial Road Southbound Left/Right (LOS F, v/c 0.91);
   - South Street/ Rideau Ferry Road-Gore Street Eastbound Left (LOS F, v/c 1.09).

   The intersection of Sunset Boulevard-Harris Street/Wilson Street is the only intersection to have an overall intersection registering capacity utilization greater than 1.00, which indicates over-capacity concerns during future operation. There are opportunities to improve traffic signalization at intersections with problem movements in the future to achieve modest reductions in queuing and delays. All other intersections would operate at a LOS D or better and are expected to operate within their capacity.

Most the operational concerns are focused along the Highway 7 and Wilson Street Corridors. The New Arterial Road, North Street and Craig Street combination will help shift some of the traffic off those corridors. Intersections along the New Arterial Road, North Street and Craig Street are shown to operate at acceptable levels of service well within their capacity. It should be reiterated that the future traffic forecasts were quite conservative (i.e., erring on the high side), and the unknown build-out yeas for the considered development areas.

5.6 PROBLEM AND OPPORTUNITY STATEMENT

The Town of Perth's transportation system must be enhanced to improve the mobility, safety and utility of the system for all types of users including: pedestrians, cyclists, persons with mobility and accessibility challenges, business interests, residents, tourists and recreational interests. These enhancements should also support local businesses and goods movement, and encourage further development in a manner consistent with the Town's Official and Strategic Plans. Key aspects of those plans being to ensure and improve connectivity between the new neighbourhood expected to develop in the northerly end of Town to the downtown and to render the Dufferin street corridor more welcoming to, and safer for, non-vehicular modes of travel.

6.0 COMMUNITY ENGAGEMENT

6.1 PUBLIC OPEN HOUSE #1

A Public Information Centre (PIC) was held on Monday, February 9, 2014 between 4:30 and 6:30 p.m. to review the existing conditions assessment for the Perth Municipal Transportation Master Plan. The PIC comprised seventeen display boards for review as well as Town and consultant staff available for discussion.

Through informal discussions with attendees, several comments were noted including:

- Concern regarding traffic operations at the intersection of Drummond Street with Isabella Street, partially due to traffic associated with the Drummond Street hospital access;
- Concern about conflicts between parent and school bus pick-up/drop-off (PUDO) activity at Perth and District Collegiate Institute (PDCI) as currently the Grade 7 and 8 student PUDO area is at the front of the school on Victoria Street before the buses circulate behind the school building to the Grade 9-12 PUDO area;
- Concerns with turning trucks at the Gore Street at North Street intersection;
- Concerns with truck traffic on Gore Street impacting the ability to attract more desirable rental tenants for residential units above Gore Street stores as well as vibrations caused by trucks damaging the homes;
- Suggestion to request OPP staff or hire off-duty OPP officers to enforce use of existing truck routes;
- Suggestion to consider street closures as part of festivals to encourage pedestrian activity and tourism;
- Concerns about the quality and visual appearance of the Wilson Street parking lot;
- Suggestion to construct a parking structure in the Wilson Street parking lot;
- Higher daily volumes of trains historically (20-25 a day) as trains may be consolidating into fewer, but longer trains; and
- Concerns about the through lane alignment at the Wilson Street at Foster street intersection.

The information exchanged with the public was used to assist in defining the problems and opportunities as the Study progressed.

6.2 ONLINE SURVEY

An online survey was conducted to better understand the experience and perceptions of residents with respect to transportation in the Town of Perth. The survey obtained public comments and opinions and aided in identifying and selecting alternatives for the Town. A survey of 12 questions was used to understand how residents, business owners, commuting workers and others use the transportation system and what their priorities are for improvement. Responses were collected between May 11, 2016 and July 11, 2016. The survey and results have been provided in **Appendix C.**

6.3 PUBLIC OPEN HOUSE #2

A second Public Information Centre (PIC) held was on Thursday, September 22, 2016 between 5:00 and 7:00 p.m. to review the proposed alternatives for the Perth Municipal Transportation Master Plan. The meeting comprised nine display boards for review, a PowerPoint presentation with 72 slides, as well as Town and consultant staff available for discussion. Comments made during the second PIC largely reflected the similar concerns from the first PIC:

- Concern about traffic operations at the Drummond Street at Isabella Street intersection partially due to traffic associated with the hospital access on Drummond Street;
- Concern about conflicts between parent and school bus pick-up/drop-off (PUDO) activity at PDCI as currently Grade 7 and 8 students PUDO area is at the front of the school on Victoria Street before the buses circulate behind the school building to the Grade 9-12 PUDO area;
- Concerns with trucks turning at the Gore Street at North Street intersection;
- Concerns with truck traffic on Gore Street impacting the ability to attract more desirable rental tenants for 2nd floor residential units above Gore Street stores as well as truck traffic vibrations damaging the homes;
- Suggestion to request OPP (or hire off-duty OPP officers) to enforce use of existing truck routes;
- Suggestion to examine street closures as part of festivals to encourage pedestrian activity and tourism;
- Concerns about the quality and visual appearance of the Wilson Street parking lot;
- Suggestion to construct a parking structure in the Wilson Street parking lot;
- Higher daily volumes of trains historically (20-25 a day) as trains may be consolidating into fewer, but longer trains; and
- Concerns about through lane alignment at the Wilson Street at Foster street intersection.

Information exchanged between the public, consulting staff, and Town staff was used to assist in defining the problems and opportunities as the Study progressed.

7.0 OPERATIONAL ALTERNATIVES AND RECOMMENDATIONS

When developing recommendations for issues identified options are created to choose from. In some cases, there are very few options, and in others there a several. The following section details the options identified and analysed for recommendations considering the vision, goals, and objectives of the Town.

7.1 TRAFFIC OPERATIONS

7.1.1 Truck Routes

7.1.1.1 Heavy Truck Traffic

Based on a review of the 8-hour truck volumes:

- 30-40% of trucks to/from Wilson Street travel along North Street, the remaining 60-70% of trucks travel along Gore Street;
- 20-30% of trucks to/from Wilson Street travel along Foster Street despite North Street being the truck route; and
- Slightly less than half of trucks to/from Craig Street/CR 43 use Craig Street despite Chetwynd Street being the truck route.

Recommendations to address concerns of heavy truck traffic through the Town include:

- Use truck signs at two locations upstream of truck route turns on both sides of the road;
- Use truck signs at one location downstream of the truck route on one side of the road to confirm route choices; and
- Add tabs to signs for number of axle, weight, or seasonal restrictions.

These recommendations are the minimum to improve truck route compliance. In addition to these it is recommended adding the following signs at the locations detailed below in **Table 18** and mapped in **Figure 14**.

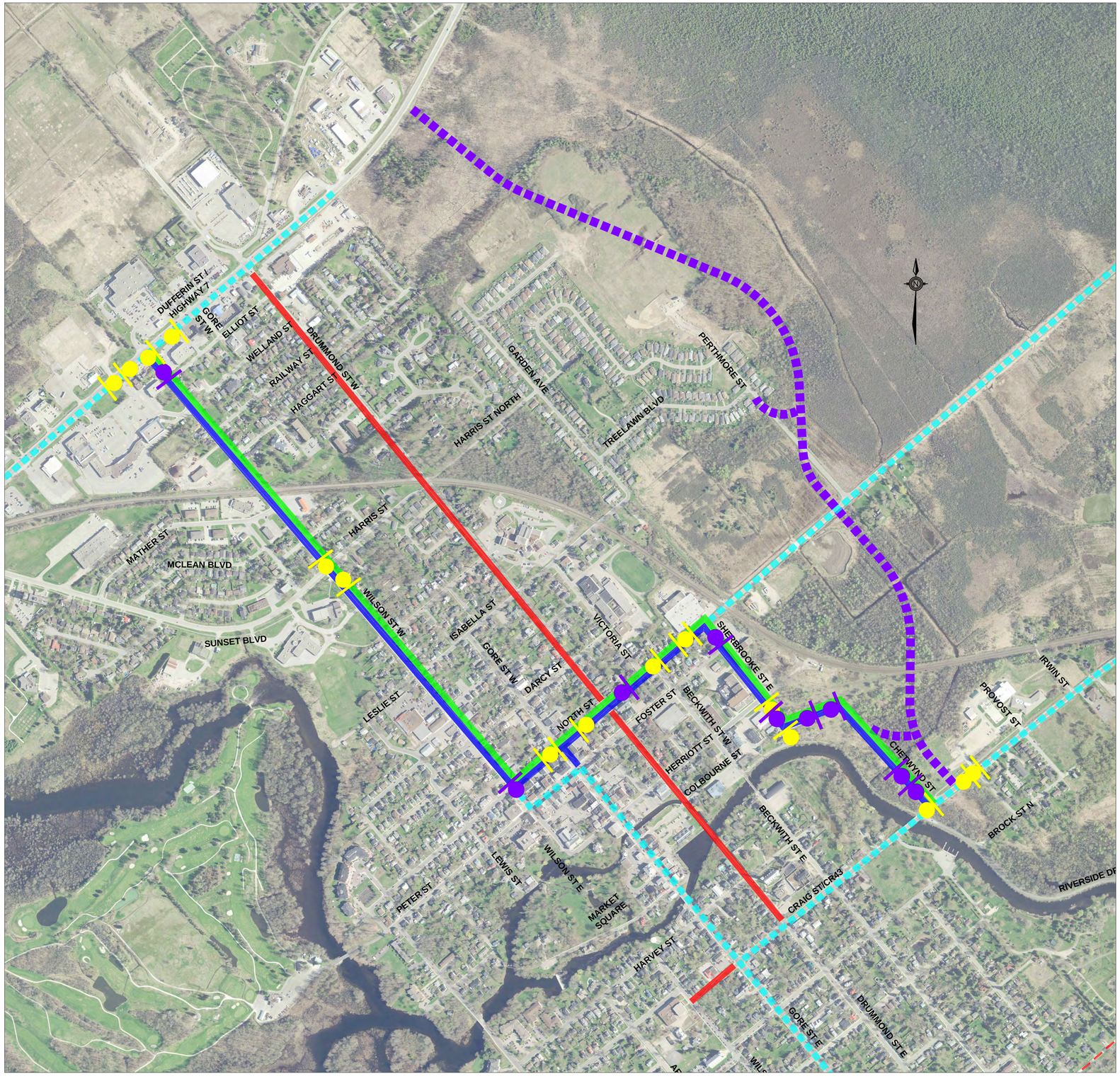
If truck route problems persist after these recommendations have been implemented, police enforcement may be required.

Table 18 - Proposed Truck Signage & Wayfinding Locations

Road	Direction	Sign	Location	Pole	Signs	New Pole
CR 43	WB	Truck route / right	130m u/s of Chetwynd	RHS no parking pole	2	
CR 43	WB	Truck route / right	100m u/s of Chetwynd	RHS & LHS hydro poles	4	
CR 43	WB	No trucks	10m d/s of Chetwynd	RHS hydro pole	1	
Chetwynd	NB	Truck route / right	120m u/s of Sherbrooke	RHS new pole	2	1
Chetwynd	NB	Truck route / right	60m u/s of Sherbrooke	RHS new pole	2	1
Sherbrooke	SB	No trucks	30m d/s of Chetwynd	RHS hydro pole	1	
Sherbrooke	NB	Truck route / left & right	35m u/s of North	RHS new pole	2	1
North	WB	Truck route / ahead	50m d/s of Sherbrooke	RHS hydro pole	2	
North	WB	No trucks / Left & right	Beckwith	RHS hydro pole	2	
North	WB	No trucks / Left & right	50m u/s of Drummond	RHS hydro pole	2	1
North	WB	Truck route / right	40m d/s of Gore	RHS hydro pole	2	
Wilson	NB	Truck route / ahead	50m u/s of Harris/CR6	RHS hydro pole	2	
Wilson	NB	Truck route / right & left	50m u/s of Hwy 7	RHS Right Turn Lane sign pole	2	1
Hwy 7	WB	Truck route / straight & left	10m & 75m u/s of Wilson	RHS hydro poles	4	
Hwy 7	EB	Truck route / straight & right	50m & 100m u/s of Wilson	RHS light standard	4	
Wilson	SB	Truck route / ahead	10m u/s of Harris/CR6	RHS hydro pole	2	
Wilson	SB	No trucks / ahead & right	5m d/s of North	RHS new pole near EB stop sign	2	1
North	EB	Ahead [add to existing truck route sign]	25m u/s of Gore	RHS existing truck route sign pole	1	
North	EB	Ahead [add to existing truck route sign]	25m u/s of Drummond	RHS existing truck route on hydro pole	1	
North	EB	Truck route / right	60m u/s of Sherbrooke	RHS hydro pole	2	
Sherbrooke	SB	Truck route / left	50m u/s of Chetwynd	RHS hydro pole	2	
Sherbrooke	SB	Truck route / left	5m u/s of Chetwynd	RHS new pole	2	1
Chetwynd	SB	Truck route / left / No trucks / right	50m & 100m u/s of CR43	RHS new pole	4	2

7.1.1.1.1 Oversize Load Routes

Oversize loads put physical strain on roadway infrastructure and require routes that can physically accommodate them. The County has an oversize load permit system, however the Town of Perth currently does not. Due to the numerous oversize loads (1-2) per week as well as a designated oversize load route, the Town should implement an oversize load permit system. Under this permit system, all vehicles whose dimensions or weight and/or loads exceed the limits set out in the Highway Traffic Act would be required to have an oversize load permit. The desired route would be Wilson Street/North Street/Sherbourne Street/Chetwynd Street to CR 43 and then to Highway 401 via Smith Falls or CR 1. Gore Street/North Street does not work for oversize loads due to various constraints. The oversize load routes are illustrated in **Figure 14** below.



LEGEND

- SIGNED TRUCK ROUTE
- DESIGNATED TO PROVIDE TRUCK ACCESS
- SIGNED TRUCK PROHIBITION
- FUTURE TRUCK ROUTE
- OVERSIZED TRUCK ROUTE

POLE
PROPOSED SIGN (ATTACHED TO EXISTING POLE)
FACE OF SIGN

POLE
PROPOSED SIGN (WITH NEW POLE)
FACE OF SIGN

NOTE:

1) FOR SIGN INFORMATION, REFER TO THE DETAILED TABLE PROVIDED IN REPORT.

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision		By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS Dwn.	SK Chkd.	CS Dsgn.	15.02.02 YY.MM.DD

Permit-Seal

Client/Project
The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title
FIGURE 14
PROPOSED TRUCK ROUTE SIGNAGE & WAYFINDING

Project No.	Scale	
165000919	1:5000	
Drawing No.	Sheet	Revision
14	of	0

7.1.1.1.2 Intersection Issues

Two intersections were identified as problematic and unsafe for truck movements: North Street at Wilson Street, and Craig Street at Gore Street. The intersection of North Street and Wilson Street is challenging for trucks to navigate despite it being part of the designated truck route. Westbound vehicles on North Street often need to wait several car lengths back from the stop bar to allow a truck to complete their turning movement. In other cases, vehicles need to reverse, travelling in the wrong direction to provide adequate space for a turning truck. The New Arterial Road would provide an alternative route for trucks, which would mean shorter term improvements to North/Wilson and Gore/Craig intersections to alleviate turning movements would no longer be required.

At the intersection of Wilson Street/North Street it is recommended to reduce the North Street westbound approach to a single lane to create a wider eastbound receiving lane. At Gore Street/Craig Street geometric improvements and property would be required to accommodate truck movements without encroaching into opposing lanes of travel. This approach would be costly with minimal benefit. The swept paths for turning trucks at the intersection of North Street/Wilson Street for the southbound left turn and westbound right turning movements are illustrated below.

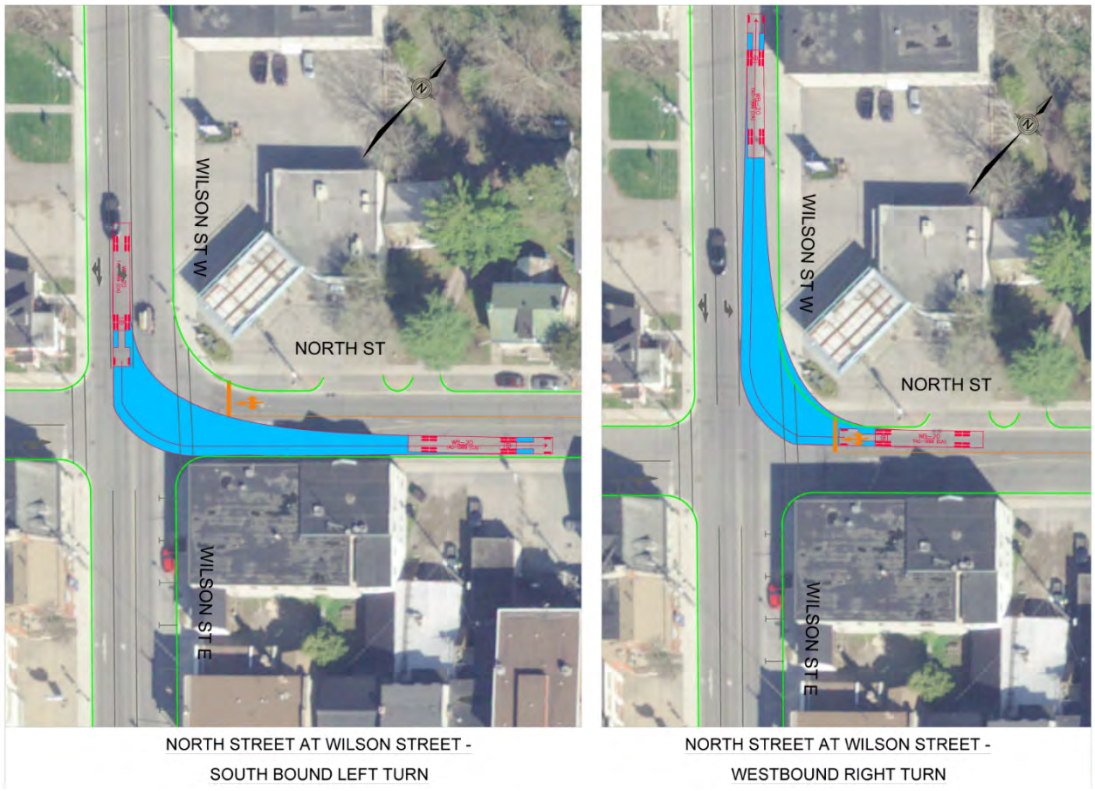


Figure 15 - Truck Swept Paths with recommended improvements at North /Wilson

7.1.2 Future Needs

7.1.2.1 New Arterial Road

The following assumptions and methodology were utilized for estimating at what percentage of the total development the requirement for the New Arterial Road (NAR) would trigger. This section should be read in conjunction with section 4.0 Traffic Forecasts.

The future transportation network was modelled with and without the New Arterial Road (NAR). The following is a summary of the differences:

- In comparison to the operational analysis results for the future horizon with the NAR provided, several study area intersections will be impacted. That being the overall intersections and specific movements will be further exacerbated and are anticipated to operate poorly under the 2041 horizon; and
- The new arterial road (NAR) provided an additional north-south link. Without this additional transportation corridor, the site traffic from future developments would be distributed throughout the study area intersections and further impact them to reach Highway 7 to the north, and Craig Street or South Street to the south; Specifically, site traffic from the Perthmore Glen and the Tayview Lands residential developments;

The future horizon year of 2041 was selected to correspond with the projected forecasts from the document "Growth Management Strategy – Town of Perth, February 20, 2014 Study". The future 2041 horizon year analysis without the NAR in place has provided indication that the NAR would be required to accommodate the built-out future development areas. A comparison of future LOS conditions with and without the NAR can be seen in **Table 19** and visualised in **Figure 13** and **Figure 16**.

The development areas include the Infrastructure Master Plan Study Area (i.e., lands north of Highway 7), the Perthmore Glen residential development, the Golf Club Lands residential development, and the Tayview Lands residential development. As there is uncertainty associated with the timing of when these development areas would be built-out, no specific horizon year has been attributed to the future traffic forecasts. Due to their sensitivity to local market conditions, these areas could be built-out in the short-term (less than 5 years), or remain dormant up to and beyond the 2041 horizon year.

Table 19 - Volume and LOS comparison future conditions with and without NAR

Intersection	AM Peak				PM Peak			
	Volume with NAR	Volume without NAR	LOS with NAR	LOS without NAR	Volume with NAR	Volume without NAR	LOS with NAR	LOS without NAR
North Street / Wilson Street	1,338	1,476	A	A	1,760	1,958	A	F
North Street / Gore Street	382	424	A	A	572	634	A	A
North Street / Drummond Street	885	1,042	B	C	1,096	1,316	C	E
Foster Street / Wilson Street	1,360	1,460	B	B	1,823	1,969	B	B
Foster Street / Gore Street	1,333	1,432	A	A	1,758	1,904	B	B
Foster Street / Drummond Street	733	746	A	A	960	976	A	A
Craig Street / Gore Street	1,604	1,688	C	B	1,924	2,053	B	B
Highway 7 / Wilson Street	2,618	2,661	C	C	3,429	3,489	F	F

Methodology/Assumptions

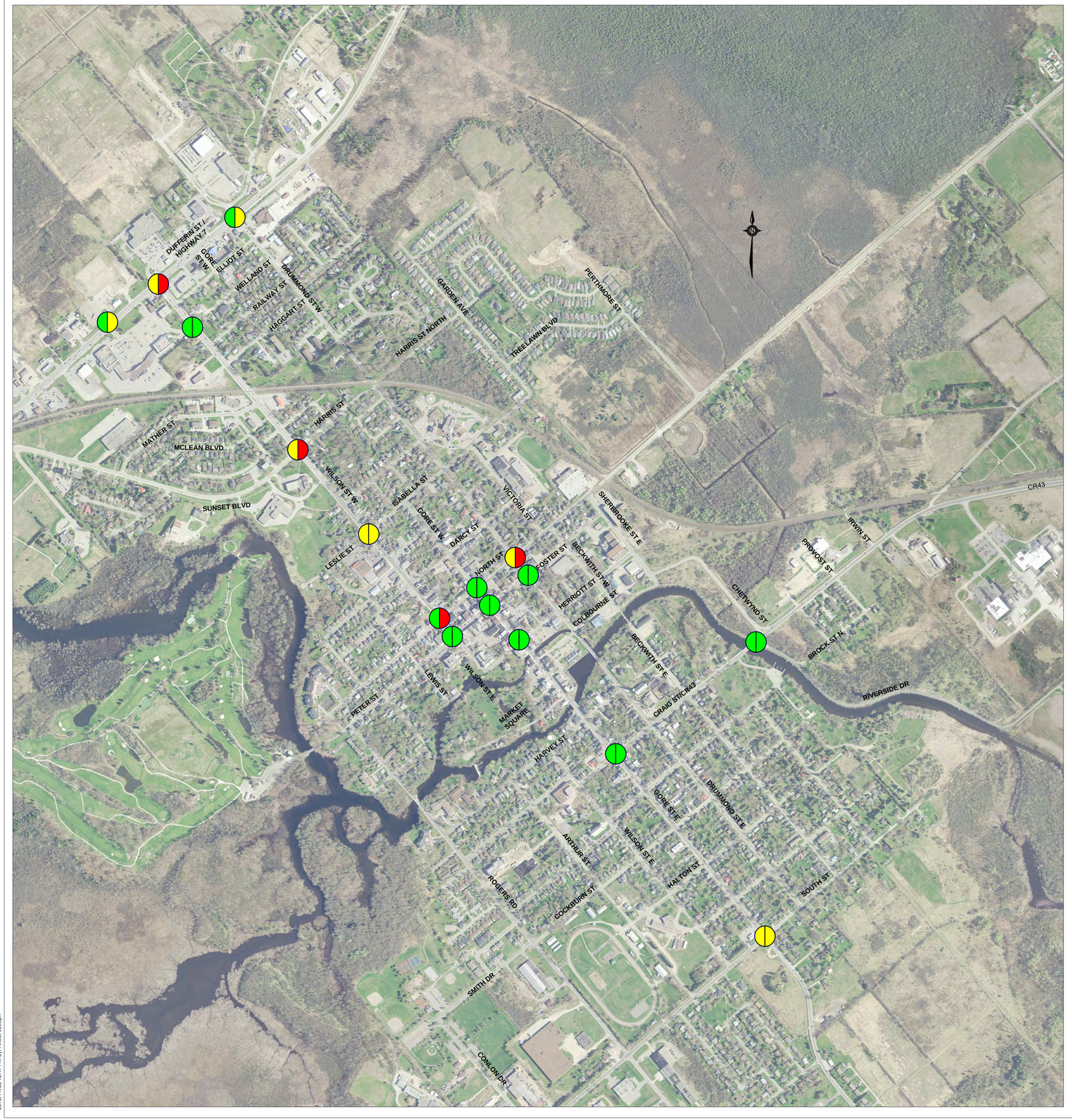
It was assumed that a linear rate of development of all lands would begin in the year 2020. For the residential developments it was assumed they would be constructed and occupied immediately. for this exercise, it was assumed that all development areas would be built and constructed simultaneously.

The intersection of North Street/Wilson Street was selected as the intersection to assist in determining the development percentage that would trigger the need for the NAR. Under the 2041 horizon without the NAR in place this intersection would have movements failing and operating overcapacity. Without the NAR in place there would be a higher volume of traffic travelling north-south on Wilson Street, as Wilson Street would be the only north-south corridor available to and from Highway 7. Additionally, it was assumed that the existing traffic control and lane arrangements would remain under the future conditions.

A sensitivity analysis was undertaken to determine at what percentage of the total development areas would cause overcapacity conditions to movements at the intersection of North Street/Wilson Street.

Conclusion

It was determined that intersection movements at North Street/Wilson Street would fail and operate at overcapacity conditions when the development areas are 80% constructed and occupied. Based on the assumption that construction would begin in 2020 representing 0% and fully built-out in 2041 representing 100%, an approximate timeline based on a linear interpolation is determined that the NAR should be constructed prior to 2037.



LEGEND

AM / PM — INTERSECTION LEVEL OF SERVICE (LOS) FOR THE WEEKDAY AM AND PM PEAK PERIODS

GREEN - LOS 'A' OR 'B'

YELLOW - LOS 'C' OR 'D'

RED - LOS 'E' OR 'F'

LEVEL OF SERVICE (LOS)

LOS A - LITTLE OR NO TRAFFIC DELAY, DRIVERS MAKE ALL MOVEMENTS EASILY.

LOS B - SHORT TRAFFIC DELAYS, DRIVERS MAY FEEL SOMEWHAT RESTRICTED.

LOS C - AVERAGE TRAFFIC DELAY, DRIVERS ON THE MINOR STREET MAY EXPERIENCE SOME DELAY IN COMPLETING CERTAIN MOVEMENTS.

LOS D - LONG TRAFFIC DELAYS, DRIVERS ON THE MINOR STREET EXPERIENCE FRUSTRATION WHILE DRIVERS ON THE MAJOR STREET EXPERIENCE SOME INTERFERENCE FROM MINOR STREET TRAFFIC.

LOS E - VERY LONG TRAFFIC DELAYS, DRIVERS ON ALL APPROACHES EXPERIENCE CONGESTION AS THE INTERSECTION APPROACHES CAPACITY.

LOS F - EXTREMELY LONG DELAYS, DRIVERS EXPERIENCE UNPREDICTABLE DELAYS AND LENGTHY QUEUES AS THE TRAFFIC DEMAND EXCEEDS CAPACITY.

NOTES:

1. DAILY TRAFFIC VOLUME ON ROADS WITHIN THE STUDY AREA ARE WELL WITHIN THE TYPICAL PLANNING LEVEL CAPACTIY FOR TWO-LANE ROADS. THE PLANNING LEVEL CAPACITY IS 15,000.
2. AWDT = AVERAGE WEEKDAY DAILY TRAFFIC VOLUME

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS Dwn.	SK Chkd.	CS Dsgn.	15.02.02 YY.MM.DD

Permit-Seal

Client/Project
The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title
FIGURE 16
INTERSECTION OPERATIONS FUTURE 2041 WITHOUT NEW ARTERIAL ROAD

Project No.	Scale	
165000919	1:3000	
Drawing No.	Sheet	Revision
16	of	0

7.1.2.2 Craig Street Bridge

The Craig Street bridge is to be rehabilitated in the next few years, which will extend the structural life of the bridge by 25 years. Approximately 2/3 of the funding for the rehabilitation has been received from the Province and the Federal government. Due to the height of boat traffic the bridge will eventually need to be replaced. There is an opportunity to improve the regional connections with construction of a new South Street bridge as an alternative to replacing the Craig Street bridge. An EA will need to be completed for the Craig Street bridge replacement, in which a South Street-Evans connection should be included as an alternative to the Craig Street bridge replacement. Proposed alignment of a future Craig Street Bridge can be seen in **Figure 17**.

An analysis of future traffic scenarios was conducted with the Craig Street bridge or South Street bridge to better understand how the network would be affected. Traffic was redistributed to use the South Street bridge, and modelled with and without the proposed New Arterial Road.

The findings of the analysis indicate that:

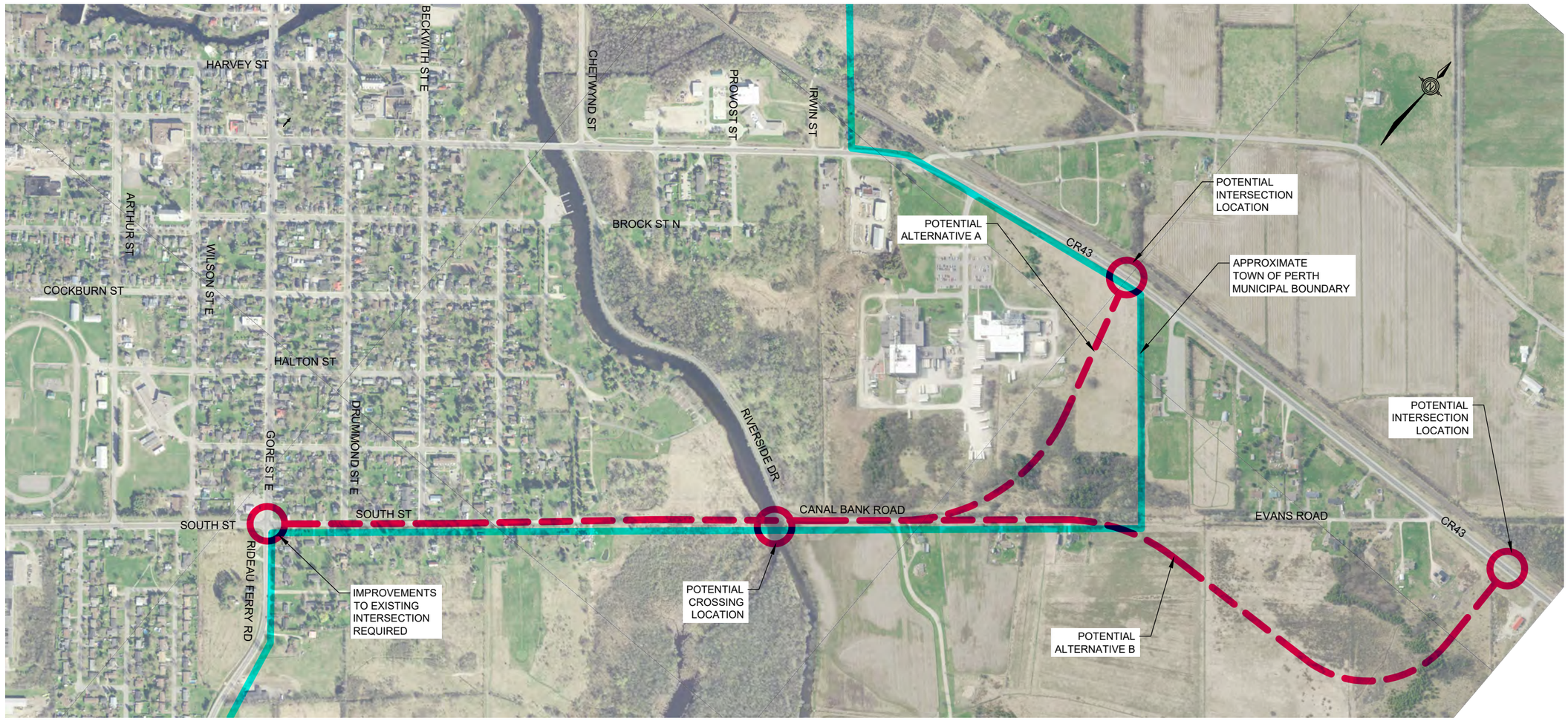
- A South Street bridge would funnel traffic toward the South Street/Gore Street intersection;
- In both scenarios, with and without the New Arterial Road, the South Street/Gore Street intersection would be able to accommodate the shifted traffic volumes under both existing and forecast traffic volumes; and
- In the scenario without the New Arterial Road, the intersection would require slight improvements, notably the addition of a westbound auxiliary right turn lane.

A detailed comparison of key intersection LOS without and with the South St bridge and no NAR can be seen in **Table 20** and visualized in **Figure 18**.

Table 20 - Volume and LOS comparison Craig St bridge VS South St bridge

Intersection	AM Peak				PM Peak			
	Volume without South St Bridge	Volume with South St Bridge	LOS without South St Bridge	LOS with South St Bridge	Volume without South St Bridge	Volume with South St Bridge	LOS without South St Bridge	LOS with South St Bridge
North Street / Wilson Street	1,476	1,476	A	A	1,958	1,958	F	F
North Street / Gore Street	424	496	A	A	634	721	A	B
North Street / Drummond Street	1,042	1,114	C	C	1,316	1,403	E	F
Foster Street / Wilson Street	1,460	1,460	B	B	1,969	1,969	B	B
Foster Street / Gore Street	1,432	1,503	A	A	1,904	1,991	B	B
Foster Street / Drummond Street	746	677	A	A	976	895	A	A
Craig Street / Gore Street	1,688	1,568	B	C	2,053	1,869	B	D
South Street / Gore Street	1,487	1,904	C	C	1,893	2,344	C	D

Note: Both scenarios do not include the NAR in the network



ORIGINAL SHEET - ANSI B

November 2016
165000919

Stantec

300W-675 Cochrane Drive
Markham ON

Notes

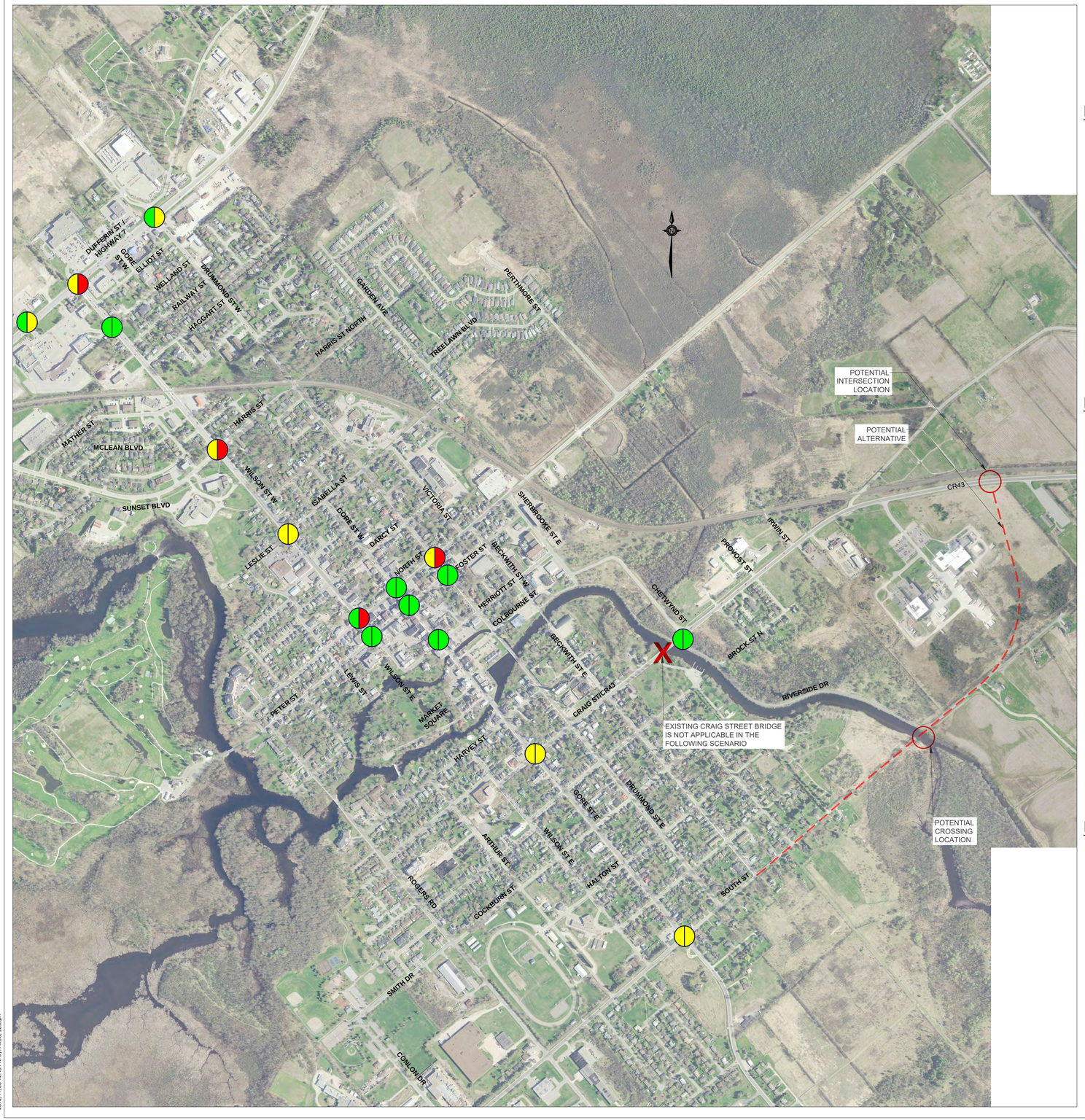
FOR DISCUSSION PURPOSES ONLY

ROADWAY ALIGNMENTS, RIVER CROSSING LOCATION, AND OVERALL FEASIBILITY REQUIRE FURTHER STUDY

Client/Project
Town of Perth
Municipal Transportation Master Plan

Figure No.
17

Title
DRAFT Conceptual Alignment
New roadway from Gore St E to CR43



LEGEND

AM PM — INTERSECTION LEVEL OF SERVICE (LOS) FOR THE WEEKDAY AM AND PM PEAK PERIODS

GREEN - LOS 'A' OR 'B'

YELLOW - LOS 'C' OR 'D'

RED - LOS 'E' OR 'F'

LEVEL OF SERVICE (LOS)

LOS A - LITTLE OR NO TRAFFIC DELAY, DRIVERS MAKE ALL MOVEMENTS EASILY.

LOS B - SHORT TRAFFIC DELAYS, DRIVERS MAY FEEL SOMEWHAT RESTRICTED.

LOS C - AVERAGE TRAFFIC DELAY, DRIVERS ON THE MINOR STREET MAY EXPERIENCE SOME DELAY IN COMPLETING CERTAIN MOVEMENTS.

LOS D - LONG TRAFFIC DELAYS, DRIVERS ON THE MINOR STREET EXPERIENCE FRUSTRATION WHILE DRIVERS ON THE MAJOR STREET EXPERIENCE SOME INTERFERENCE FROM MINOR STREET TRAFFIC.

LOS E - VERY LONG TRAFFIC DELAYS, DRIVERS ON ALL APPROACHES EXPERIENCE CONGESTION AS THE INTERSECTION APPROACHES CAPACITY.

LOS F - EXTREMELY LONG DELAYS, DRIVERS EXPERIENCE UNPREDICTABLE DELAYS AND LENGTHY QUEUES AS THE TRAFFIC DEMAND EXCEEDS CAPACITY.

NOTES:

1. DAILY TRAFFIC VOLUME ON ROADS WITHIN THE STUDY AREA ARE WELL WITHIN THE TYPICAL PLANNING LEVEL CAPACTIY FOR TWO-LANE ROADS. THE PLANNING LEVEL CAPACITY IS 15,000.
2. AWDT = AVERAGE WEEKDAY DAILY TRAFFIC VOLUME

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS	SK	CS	15.02.02
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title
FIGURE 18 - INTERSECTION OPERATIONS
FUTURE 2041 SOUTH BRIDGE
W/O NEW ARTERIAL RD

Project No.	Scale	
165000919	1:3000	
Drawing No.	Sheet	Revision
18	of	0

7.1.2.3 Road Network Optimization

Traffic data collection was undertaken with manual turning movement and classification counts (TMCs) and automatic traffic recorders (ATRs). The TMCs were conducted in October 2014 over an eight-hour period on a typical weekday (Tuesday, Wednesday, or Thursday) in 15 minute intervals classifying cars, trucks, pedestrians, and bikes during the a.m., midday, and p.m. peak periods (7:00-10:00 a.m., 11:30 a.m.-1:30 p.m., 3:00-6:00 p.m.) throughout the Town. Key conclusions from this comparison are as follows:

- Wilson Street and Foster Street p.m. peak hour traffic volumes have decreased between 1990 and 2014;
- Many roadways have experienced little to no change in traffic volumes; and
- Traffic volumes on roadways to/from destinations outside of Perth have increased, such as Dufferin Street/North Street to Carleton Place and Ottawa, and Rideau Ferry Road and Scotch Line to Kingston and Brockville.

In the Town, there are no arterial roadways that provide continuous north-south travel between Craig Street and Dufferin Street. The roadway pair of Wilson Street and Gore Street is discontinuous requiring turning movements along Foster Street and North Street. Drummond Street functions as a collector road providing access for low-density single-family residential developments, and consequently, would be an undesirable roadway for higher auto and truck traffic volumes.

There are opportunities to improve the connectivity of the Town's transportation network to the broader County and Provincial transportation network.

In comparison to traffic volumes collected in May 2007 for the Town of Perth's Arterial Roadway Municipal Class EA Study, June 2008, the October 2014 p.m. peak hour traffic volumes were lower, ranging from 400 vehicles less on Dufferin Street/Highway 7 and the north end of Wilson Street, to 30-100 vehicles less on more southerly locations along Wilson Street, Gore Street, Craig Street, and Foster Street.

It should be noted that these comparisons only reflect volume changes in the weekday p.m. peak hour during the non-summer seasons and not weekend, summer, or daily traffic volume changes. Comparisons of these other types of volumes were not possible due to limitations in the available traffic data.

7.1.3 Intersection Operation Optimization

Traffic signal timings and coordination were reviewed through use of analysis software and GPS equipped cars travelling along Gore Street, Foster Street, and Wilson Street. Drivers experienced minimal delays at traffic signals which indicated good levels of service. Between traffic signals drivers experienced modest delays due to lack of coordination of the signals. The following subsections explore considerations of changes to the network's intersection controls.

7.1.3.1 All-Way Stop Signs

A PIC was held in Perth on Thursday, September 22, 2016 to review the proposed alternatives for the Perth Municipal Transportation Master Plan. During the PIC an attendee recommended consideration of all-way stop control implementation at the intersections of North Street/Wilson Street, Herriott Street/Gore Street, and D'Arcy Street/Wilson Street to act as a means of traffic calming. This section explores whether stop control would be warranted at these locations and serves to communicate some of the variables and requirements that are considered during the warrant process. Reference was made to the Ontario Traffic Manual (OTM) Book 5 – Regulatory Signs.

As stated within OTM Book 5 – Regulatory Signs, some of the conditions in which all-way stop controls should not be used include:

- Where protection of pedestrians, school children is a prime concern. This concern can usually be addressed by other means;
- As a speed control device;
- On roads where progressive signal timing exists;
- On roads within urban areas having a posted speed limit in excess of 60 km/h;
- At intersections that are not roundabouts having less than three, or more than four, approaches;
- On multi-lane approaches where a parked or stopped vehicle on the right will obscure the STOP sign;
- As a means of deterring the movement of through traffic in a residential area;
- Where visibility of the sign is hampered by curves or grades, and insufficient safe stopping distance exists; or
- Where any other traffic device controlling right-of-way is permanently in place within 250 m, with the exception of a YIELD sign.

All-way stop controls should be considered only under the following situations, as stated within OTM Book 5 – Regulatory Signs:

- As an interim measure, where traffic control signals are warranted but cannot be implemented immediately;
- At locations having a high collision frequency where less restrictive measures have been tried and found inadequate; or
- As a means of providing a transition period to accustom drivers to a change in intersection right-of-way control from one direction to another.

The minimum volume warrant for all-way stop control on arterial and major roads states that the following conditions must be met to be considered for installation:

- The total vehicle volume on all intersection approaches exceeds 500 vehicles per hour for each of any eight hours of the day;
- The combined vehicular and pedestrian volume on the minor street exceeds 200 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight hours, with an average delay to traffic on the minor street (either vehicles or pedestrians wishing to enter the intersection) of greater than 30 seconds; and
- The volume split does not exceed 70/30. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway.

OTM Book 5 – Regulatory Signs communicates that all-way stop control is not to be used as a form of traffic calming, whether it be to improve pedestrian safety or reduce the speed of vehicles. It is noted that no change in right-of-way control direction occurs near any of the identified intersections, and the introduction of all-way stop control would in fact create a less consistent right-of-way assignment in the area.

A preliminary analysis was conducted with regards to the traffic volumes relative to the thresholds outlined in the minimum volume warrant. Existing volume counts were available at the intersections of Wilson Street/North Street and Gore Street/Herriott Street. Both intersections meet the threshold of 500 vehicles per hour on all approaches, however the 200 units per hour (all vehicles plus pedestrians) threshold for the minor intersecting road is not met. Volume splits exceeded the maximum threshold of 70/30; having an imbalance of approaching volumes will cause undue delay to the minor street under all-way stop control, thus resulting in poor operations. All three of the conditions must be met to warrant all-way stop control. Since two conditions are not met, all-way stop control is not warranted for installation. The minimum volume warrant conditions have been summarized below in **Table 21**. A summary of the volume splits is provided in **Table 22**.

Table 21 – Minimum Volume All-Way Stop Control Warrant

Intersection	Condition	Condition Met?	Warranted?
North Street / Wilson Street	a) Total vehicle volume on all intersection approaches exceeds 500 vehicles per hour for each of any eight hours of the day.	Yes	No
	b) Volume on the minor street exceeds 200 units per hour (all vehicles plus pedestrians) for each of the same eight hours.	No	
	c) The volume split does not exceed 70/30.	No	
Herriott Street / Gore Street	a) Total vehicle volume on all intersection approaches exceeds 500 vehicles per hour for each of any eight hours of the day.	Yes	No
	b) Volume on the minor street exceeds 200 units per hour (all vehicles plus pedestrians) for each of the same eight hours.	No	
	c) The volume split does not exceed 70/30.	No	

Table 22 - Volume Splits Major/Minor Roads

Intersection	Major Road Volume		Minor Road Volume		Volume Split	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Wilson Street / North Street	833	1,022	116	154	88/12	87/13
Gore Street / Herriott Street	804	934	82	167	91/9	85/15

A summary of the situations which must be met before considering the installation of all-way stop control and whether they have been met for each intersection is summarized below in **Table 23**.

Table 23 - All-Way Stop Control Warrant

Intersection	Situation	Situation Met?	Warranted?
North Street / Wilson Street	a) Traffic control signal warranted but cannot be immediately implemented	No	No
	b) High collision frequency where less restrictive measures tried and found inadequate	No	
	c) Transition period required to accustom drivers to change in intersection right-of-way control direction	No	
Herriott Street / Gore Street	a) Traffic control signal warranted but cannot be immediately implemented	No	No
	b) High collision frequency where less restrictive measures tried and found inadequate	NA	
	c) Transition period required to accustom drivers to change in intersection right-of-way control direction	No	
D'Arcy Street / Wilson Street	a) Traffic control signal warranted but cannot be immediately implemented	No	No
	b) High collision frequency where less restrictive measures tried and found inadequate	NA	
	c) Transition period required to accustom drivers to change in intersection right-of-way control direction	No	

In conclusion, implementation of all-way stop control at the identified intersections of North Street/Wilson Street, Herriott Street/Gore Street, and D'Arcy Street/Wilson Street would not be warranted nor recommended. The minimum volume warrant is not satisfied, in addition to situations in which all-way stop control may be considered are not met. Although volume data was not available for the intersection of D'Arcy Street/Wilson Street, it is anticipated that the volume split condition would not be met due to D'Arcy Street being a residential road. Due to the nature of the request being traffic calming, it is recommended that less restrictive means of traffic calming first be attempted which would not inhibit the flow of vehicles in the area.

7.1.3.2 Traffic Signal Relocation

A preliminary operational analysis was conducted with regards to the relocation of two traffic signals which are currently located at Gore Street/Foster Street and Wilson Street/Foster Street to Gore Street/North Street and Wilson Street/North Street, respectively. The relocation of traffic signals is anticipated to have little to no impact to the adjacent intersections. High delay observed on the eastbound, and westbound left/through movements at North Street/Wilson Street under existing conditions would be alleviated with the relocation of the traffic signals from Wilson Street/Foster Street. However, the removal of the signals from Wilson Street/Foster Street creates high delays during the a.m. and p.m. peak hours in the westbound left/through and southbound left movements, with the southbound left movement reaching its theoretical capacity.

Due to the low vehicular volumes that the intersection of North Street/Gore Street experiences, the introduction of a traffic signal results in worsened operations with respect to level of service, delay, capacity, and queueing on several movements. Conversion of Foster Street/Gore Street to a stop controlled intersection post-relocation results in improved operations in the westbound approach, however it significantly reduces operations in the eastbound left/through and northbound left approaches. The northbound left approach would reach its theoretical capacity.

Table 24 – Volume and LOS Comparison Traffic Signal Relocation

Intersection	AM Peak		PM Peak	
	LOS without Move	LOS with Move	LOS without Move	LOS with Move
North Street / Wilson Street	A	A	F	A
North Street / Gore Street	A	B	A	B
Peter Street-Foster Street / Wilson Street	B	F	B	F
Foster Street / Gore Street	A	E	B	F
Herriott Street / Gore Street	A	A	A	A

In summary, the operational analysis post-relocation suggests that the overall operations would be negatively affected at both intersections by the relocation of the signals from Gore Street/Foster Street to Gore Street/North Street, and the relocation from Wilson Street/Foster Street to Wilson Street/North Street may result in a trade-off with the stop controlled intersection experiencing high delays.

7.2 SAFETY

7.2.1 Pedestrian Crosswalks

The Town provides three courtesy crosswalks for the crossing of Gore Street in the downtown BIA area. They are located on the north and south sides of Gore Street at the Herriot Street intersection, and on the north side of Gore Street at the Basin Street intersection across from the Town's municipal office. The pedestrian crossings are courtesy crosswalks which are meant to heighten motorist awareness of pedestrians but do not ultimately give the right-of-way to pedestrians. Courtesy crosswalk signage for drivers is provided at each of these crossings and appears to be custom-made to match other municipal information signs. The signage is oriented toward motorists or cyclists travelling along the roadway. There was no signage for pedestrians using the crosswalks during the initial study period but cautionary signage for pedestrians regarding the "courtesy" status of the crosswalks erected in mid-2016.

Figure 19 - Existing Crosswalks at Herriot and Gore Streets

Perceptions of risk and danger at these crosswalks has brought into question whether any improvements can be made. A review of pedestrian activity within the vicinity of the existing crosswalks was completed. Pedestrian counts were undertaken on Saturday, August 23, 2014 in 15-minute intervals at the following locations:

- Herriot Street N Crosswalk;
- Herriot Street S Crosswalk;
- Between Herriot Street and Market Square;
- Market Square Crosswalk;
- Between Market Square N and Market Square S;
- Between Market Square S and Mill Street.

Herriott Street

Field observations at the Herriot Street crosswalks identified a generally high level of compliance with only 149 out of 978 pedestrian crossing movements being made illegally between Herriot Street and Market Square. Peak pedestrian activity occurred between 12:45 p.m. to 1:45 p.m. where 170 or 21% of the total daily crossings occurred.

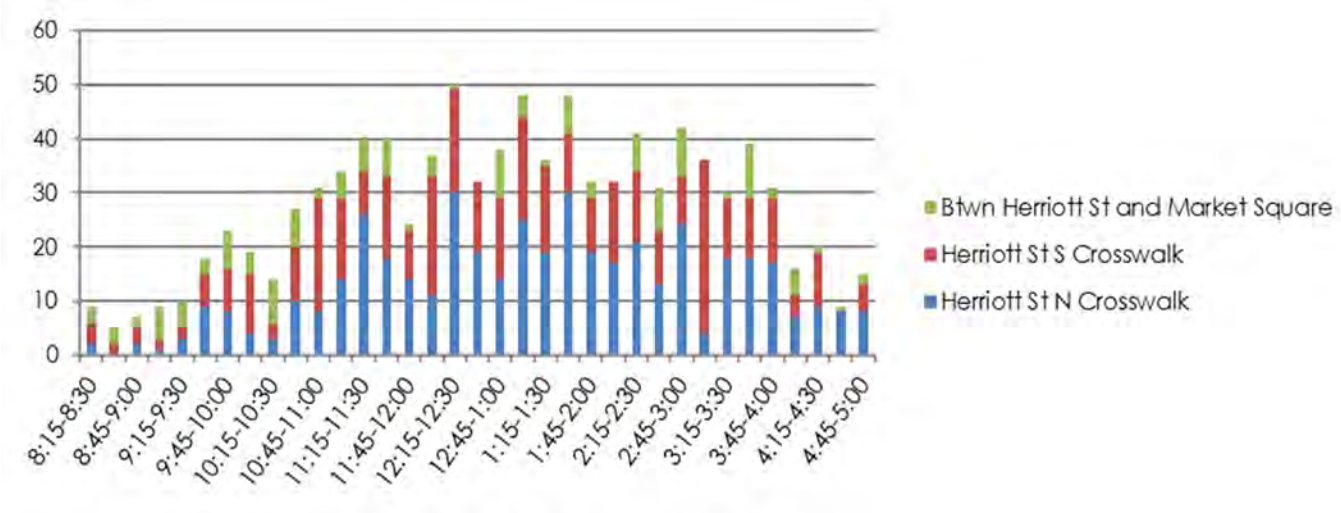


Figure 20 - Herriot St Crosswalk Pedestrian Movements, Saturday, August 23, 2014

An informal pedestrian conflict study was undertaken on Friday, August 22, 2014. From 10:30 a.m. to 2:30 p.m., 537 pedestrian crossings were observed at these two crosswalks. Of these crossings, 4 pedestrians (crossing as one group), and 1 vehicle were required to make a sudden manoeuver to avoid conflict. These 5 potentially hazardous conflicting maneuvers represent 0.9% of the total crossings observed during this time period.

Market Square

Field observations at the Market Square crosswalk identified a generally high level of compliance with only 137 out of 734 pedestrian crossing movements being made illegally between Market Square N and Mill Street. Peak pedestrian activity occurred between 10:45 a.m. to 11:45 a.m. where 141 or 19% of the total daily crossings occurred.

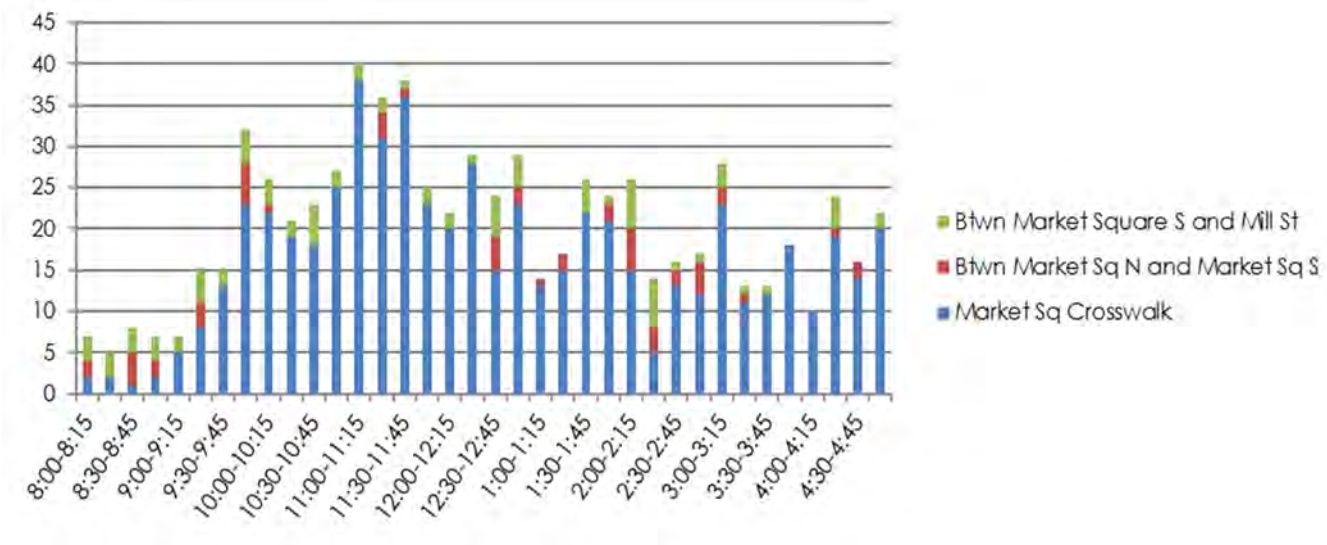


Figure 21 - Market Square Crosswalk Pedestrian Movements, Saturday, August 23, 2014

Pedestrian crossing volumes are illustrated in **Figure 22**.

Figure 22 - Pedestrian crossing volumes, Downtown Perth

Alternatives

Based on the field observations there are opportunities to improve the crosswalks and clarify concerns pertaining to who has the right-of-way.

Our comparison of alternatives (show below in **Table 25**) has identified option F, Enhanced Signage (with flashing beacons), as the preferred option. The overall impressions from our field data are that most drivers were courteous and the pedestrians were observant and cautious. Therefore, in the local context, and in consideration of the absence of pedestrian injuries/fatalities, it can be concluded that the courtesy crosswalks are providing the functionality that was intended without the expense of formal crosswalk right-of-way control that could be provided with traffic signals. The effectiveness of the courtesy crosswalks is also demonstrated by most pedestrians using the designated crossings during the day when traffic volumes are higher rather than randomly crossing mid-block at less visible locations (such as between parked cars). This concentration effect provides a "safety in numbers" benefit to pedestrians as well as enhancing driver expectations with respect to the likely locations of pedestrian activity.

Table 25 - Pedestrian Crosswalk Alternative Options Evaluation

Option	A	B	C	D	E	F
Criteria	Do nothing	Removal of crosswalks	Full signalization of crossing	Modification of existing crossing design (e.g. sidewalk bulb-outs; raised crossing)	Relocation and modification of crossing (midblock pedestrian signal)	Enhanced signage (flashing beacons; advisory signage oriented to crossing pedestrians)
Traffic Operations	-	×	✓	-	-	-
Geometrics & Safety	×	×	✓	✓	✓	✓
Built & Cultural Heritage	✓	✓	×	✓	✓	-
Pedestrian Convenience	-	×	-	-	✓	✓
Cost	✓	✓	×	✓	×	✓
Overall	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓

Notwithstanding, there are several concerns with the current crosswalk operations. These include the visibility of the crossings, challenging sight lines, and signage that is inconsistent with other pedestrian crosswalks in nearby municipalities as well as the Ontario Traffic Manuals. There were also driver and pedestrian behaviours observed that indicate a clear lack of understanding as to who legally has the right-of-way (per the *Ontario Highway Traffic Act*). It is recommended that improvements be made to the existing crosswalks, using the recently introduced Level 2 Pedestrian crossover detailed in the *Ontario Highway Traffic Act* (Regulation 401/15, Section 8(1) p.1997-1998). The Level 2 pedestrian crossover adds improved signage, pavement markings and flashing lights to notify motorists when pedestrians are crossing the road. This would require updates to provide the appropriate signage, changes to pavement markings and optional overhead signs. An illustration of the recommended changes is provided below in **Figure 23** along with an example of an enhanced signage crosswalk, **Figure 24**.

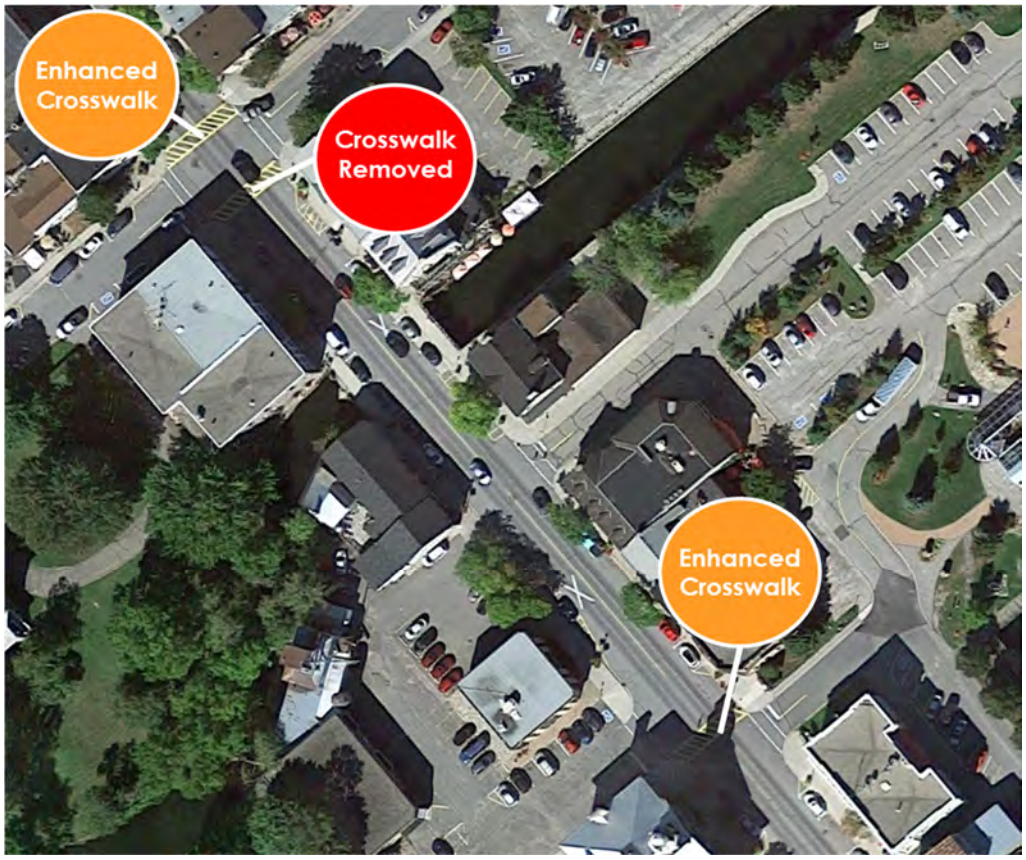


Figure 23 - Recommended Enhanced Crosswalk Locations

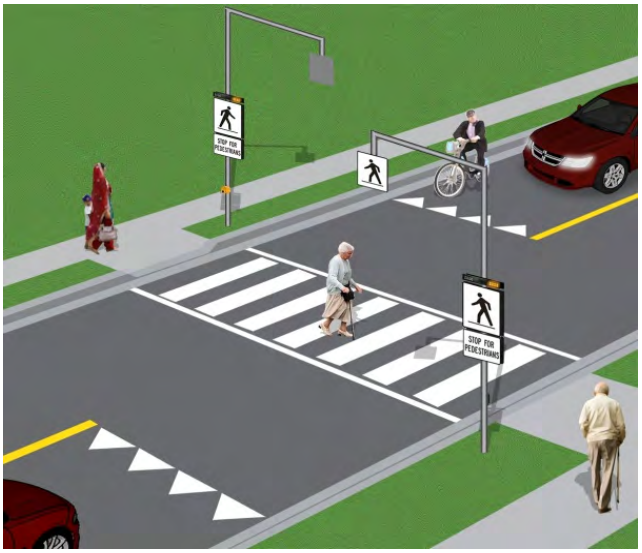


Figure 24 - Enhanced Crosswalk Signage

Best practices suggest an upgraded crossover should be placed on only one side of Herriott Street as opposed to replacing both the north and south crosswalks with Level 2 crossovers. As such it is recommended that the crossover be placed on the north side due to higher pedestrian volumes and for better cross-town connections east and west of Gore Street based on the existing sidewalk network.

Additional Crosswalk Locations

Requests from members of the public to consider new locations for courtesy crosswalks were identified at the following locations:

- Drummond St & Mary Street;
- Drummond Street & Daines Place/Haggart Street; and
- Wilson Street & Boulton Street.

A preliminary review of the intersections on Drummond Street shows about half the traffic volume observed on Wilson Street with approximately 6,000 average 2-way daily traffic volumes if we take the observed volumes from the Drummond Street stretch between Harris Street and Perkins Boulevard. As Drummond Street is considered an Arterial Road, it plays an important role in move cross-town, and to a smaller extent, regional traffic. The proposed location on Wilson Street also presents challenges with regards to its proximity to the existing signalized intersection directly north at Wilson Street & Leslie Street/Isabella Street. The proposed locations do not currently have any intersection controls that would be conducive to adding a crosswalk. All are two-way stop sign intersections with Drummond or Wilson Streets being given a free-flow path through. To determine the warrants for crosswalks at these intersections, careful consideration must be given to how many pedestrians currently cross illegally creating conflicts and the associated safety risks compared to the operational efficiency of the roadway as an Arterial for traffic.

The Ontario Traffic Manual (OTM) provides information and guidance for transportation practitioners to promote uniformity of treatment in the design, application and operation of traffic control devices and systems across Ontario. These standards balance operational efficiency and safety to promote the design of traffic control facilities to conform to proven standards and designs. There are certain cases where pedestrian crosswalks are warranted, and in other cases, they are not warranted depending on the number of vehicles that operate on a roadway, design constraints and considerations, as well as how many pedestrian conflicts are observed, or anticipated. Ain order to effectively determine the need for a pedestrian crosswalk at these three locations, it is recommended that a pedestrian crosswalk study by done in conjunction with pedestrian counts.

7.2.2 Elevated Accident Intersections

There are several methods to determine what is 'acceptable' safety performance with regards to the three intersections of concern (Drummond Street at Craig, Gore Street at North Street, and North Street at Wilson Street). From a societal perspective, acceptable safety performance equates to zero road fatalities and, to a lesser extent, zero serious injuries.

From the perspective of a road authority, it is almost fiscally impossible to reduce the risk of fatalities to zero, therefore many road authorities apply scientific and statistical methods to analyze large collision data sets. Typically, an 'expected' safety performance (in terms of collision frequency and severity given a specific setting and traffic volume) is calculated, and road authorities implement collision countermeasures (which also have statistically proven effects) wherever the observed safety performance is poorer than what should be 'expected'. However, full implementation of these statistical processes can sometimes require significant resources and can therefore be impractical for smaller road authorities. Furthermore, there are ethical implications to setting a standard to simply achieve at-or-below-average safety performance.

The "minimum" standard, commonly applied by many road authorities, is to ensure compliance with nominal safety guidelines – e.g. conforming to published geometric design guidelines – and to review any specific safety concerns identified by staff. These reviews ideally take the form of a formal study called an In-service Road Safety Audit (ISRSA), which follow a process that evaluates observed collision data, compliance with design guidelines, roadside safety hazards, signage and pavement markings, human factors conditions, and other site-specific considerations.

Based on the limited data available, the relatively low number of accidents suggest that there is no acute safety performance issue at the subject intersections. Completing ISRSAs is beyond the scope of work of this assignment, and it cannot be confirmed whether the observed safety performance is worse than what would be expected of comparable intersections (for example, the Drummond-Craig intersection may be at or below average expected collisions due to a relatively higher proportion of minor-road turning traffic). That being said, ISRSA recommendations commonly include a suite of safety improvement strategies with varying costs and impacts, with the low-cost and highly practical recommendations largely related to signage and pavement markings. There are numerous signage and marking strategies that can be implemented at the three locations of concern that, in combination, can serve to increase the conspicuity of the intersections and therefore have some positive effect on safety performance:

- Add centerline markings at least 50 metres upstream of each approach;
- Increase the width of stop bars from 300mm to 600mm;
- Add the ladder-type crosswalk markings on all approaches;
- Apply permanent (e.g. thermoplast) markings for any changes or additions to pavement markings;
- Install larger STOP signs (i.e. 750mm rather than 600mm size); and
- Install regulatory (black and white) pedestrian crosswalk signs at crosswalk locations.

Other safety-related recommendations, such as changes to geometry or curbs, sightline management, intersection control type, illumination, etc. would require a separate, more detailed, and site-specific study.

7.2.3 Speed Limits

To identify roads which experience speeding, seven locations were observed for traffic speeds. Speeding is a common issue which increases the risk of higher-severity collisions. The risk of fatality doubles with a 17% increase in average speed.

The average speed and 85th percentile speed (the speed at which 85% of all vehicles are travelling slower than) are shown for the seven ATR locations in **Table 26**.

Table 26 - Vehicle Speeds

Location	Dir.	Posted Speed	Average Speed	85th Percentile Speed
Craig Street/CR 43 between Provost Street and Irwin Street	EB	50 km/h	66 km/h	76 km/h
	WB	50 km/h	63 km/h	72 km/h
Gore Street between Herriott Street and Market Square/Basin Street	NB	50 km/h	35 km/h	45 km/h
	SB	50 km/h	36 km/h	45 km/h
North Street/CR 10 between Sherbrooke Street E and Beckwith Street W	EB	50 km/h	47 km/h	56 km/h
	WB	50 km/h	44 km/h	53 km/h
Drummond Street W between Harris Street N/S and Perkins Boulevard	NB	50 km/h	51 km/h	59 km/h
	SB	50 km/h	47 km/h	56 km/h
Wilson Street W between Mather Street and Haggart Street	NB	50 km/h	49 km/h	57 km/h
	SB	50 km/h	52 km/h	60 km/h
Sunset Boulevard between Mather Street and George Avenue	EB	50 km/h	58 km/h	67 km/h
	WB	50 km/h	57 km/h	67 km/h
Rogers Road between South Street/CR 10 and Cockburn Street/Smith Drive	NB	50 km/h	56 km/h	66 km/h
	SB	50 km/h	60 km/h	69 km/h

The speeds shown are generally reasonable with low speeds within the downtown areas with urban cross-sections (curbs, sidewalks, etc.) and higher speeds for the roads with rural cross-sections (gravel shoulders, ditches, etc.) that connect to the transportation network beyond the Town's limits. Three locations were found to have an average speed greater than 15% above posted maximum speeds. The first two of these, Craig Street/CR 43 between Provost Street and Irwin Street and Sunset Boulevard between Mather Street and George Avenue, are found to be in a speed transition area from rural to urban settings. The third location, Rogers Road between South Street/CR 10 and Cockburn Street/Smith Drive, is on a stretch of urban road with few midblock accesses. A fourth location, Joy Avenue between Glascott Street and Leslie Street, has been identified by the Town as requiring traffic calming measures due to concerned residents.

It is recommended to implement short-term and long-term measures to address speeding concerns. In the short-term, at speed transition areas "50 km/h Ahead" signage should be posted, with two sets of larger "50 km/h Maximum" signs posted at the location of the speed change. For all three of the locations that were identified to have an average speed greater than 15% above posted maximum speeds, permanent variable-message radar boards should be installed that indicate the posted maximum speed. This radar-detected speed can have some speed-reducing effects. At Joy Avenue it is recommended to add two sets of larger "50 km/h Maximum" and a road narrowing feature to calm traffic, especially considering the residential nature of the street.

Long-term recommendations include enforcement of posted speed limits, public education strategies, roundabout construction, and further engineering studies. Enforcement of posted speed limits would only be required if short-term recommendations did not have the desired impact. Photo radar is the safest and preferred enforcement technique because it eliminates the risk of officers being struck by vehicles and of confrontations with drivers. The engineering studies would be required in the event of signage and enforcement not being effective. Safety concerns would be examined in more detail to provide a remedy that best suits the conditions. Some of the remedies that may be recommended from these studies include narrowing the roadway, reconstructing the roads to an urban cross-section (with curbs and narrower lanes), providing additional illumination, and other geometric modifications. Should any location demonstrate an excessive number of higher-severity collisions or warrant more than a two-way stop control, the Town should consider installing roundabouts, especially in speed transition areas, as they are one of the few methods to physically force a reduction in speed and to significantly improve intersection safety.

LEGEND

AUTOMATIC TRAFFIC RECORDER (ATR) (NOTE 2)

TRAFFIC CALMING AREAS

ATR LOCATION

1. CRAIG ST/CR 43 BETWEEN PROVOST ST & IRWIN ST
2. GORE ST BETWEEN HERRIOTT ST & MARKET SQ/BASIN ST
3. NORTH ST/CR 10 BETWEEN SHERBROOKE ST E & BECKWITH ST W
4. DRUMMOND ST W BETWEEN HARRIS ST N/S & PERKINS BLVD
5. WILSON ST W BETWEEN MATHER ST & HAGGART ST
6. SUNSET BLVD BETWEEN MATHER ST & GEORGE AVE
7. ROGERS RD BETWEEN SOUTH ST/CR 10 & COCKBURN ST/SMITH DR

NOTES

1. AUTOMATIC TRAFFIC RECORDERS (ATRs) WERE USED OVER 7 DAYS PRIOR TO OCTOBER 9, 2014. ATRs RECORDED VOLUME, SPEED, AND CLASSIFICATION BY DIRECTION OF TRAFFIC IN 1-HOUR INTERVALS.

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS / SK / CS		15.02.02
	Dwn. / Chkd. / Dsgn.		YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 24
SPEED ANALYSIS LOCATIONS

Project No. 165000919

Scale 1:5000

Drawing No. 24

Sheet of

Revision 0

7.2.4 One-way Street Evaluation

Safety concerns were raised by the Town with regards to the corner of Wilson Street East-Herriott Street, between Foster Street and Gore Street East. Land uses along the north end of Wilson Street East-Herriott Street include restaurants, cafes, and parking. Code Park and Stewart Park are located to the south. Pedestrians in the immediate area are noted to regularly visit the local restaurants and cross the street into Stewart Park at the corner where Wilson Street East becomes Herriott Street. Wilson Street East and Herriott Street are perpendicular to each other and it is noted that at the intersection of the roads the building (Fiddleheads Bar & Grill) obstructs drivers' sightlines. Poor sight lines at this 90-degree corner combined with the crossing of pedestrians to and from Stewart Park with no marked crosswalk raise a safety concern. The posted maximum speed limit along Wilson Street East is 50 km/h. The City asked that this area be analysed for a potential change to one-way operation to improve the safety.

A preliminary analysis of traffic operations indicated that there is little to no operational or safety benefit from converting to one-way operation, however the northbound one-way option would have fewer impacts on adjacent intersections than a southbound oriented one-way (**Table 26 and Table 27**).

Table 27 – Volume and LOS Comparison Northbound One-Way Street

Intersection	AM Peak				PM Peak			
	Volume without NB One-Way	Volume with NB One-Way	LOS without NB One-Way	LOS with NB One-Way	Volume without NB One-Way	Volume with NB One-Way	LOS without NB One-Way	LOS with NB One-Way
North Street / Wilson Street	1,338	1,338	A	A	1,760	1,760	A	A
Peter Street-Foster Street / Wilson Street	1,360	1,395	B	B	1,823	1,916	B	B
Foster Street / Gore Street	1,333	1,439	A	A	1,758	1,947	B	B
Herriott Street / Gore Street	1,270	1,337	A	A	1,666	1,753	A	A

Table 28 – Volume and LOS Comparison Southbound One-Way Street

Intersection	AM Peak				PM Peak			
	Volume without SB One-Way	Volume with SB One-Way	LOS without SB One-Way	LOS with SB One-Way	Volume without SB One-Way	Volume with SB One-Way	LOS without SB One-Way	LOS with SB One-Way
North Street / Wilson Street	1,338	1,338	A	A	1,760	1,760	A	A
Peter Street-Foster Street / Wilson Street	1,360	1,377	B	B	1,823	1,845	B	B
Foster Street / Gore Street	1,333	1,405	A	A	1,758	1,913	B	B
Herriott Street / Gore Street	1,270	1,315	A	A	1,666	1,776	A	F

There is an opportunity to alleviate safety concerns with existing two-way operations using the following safety improvements/mitigation measures:

- **Reduce speed limit**: As identified within the Town of Perth's Traffic Calming Policy, one of the objectives of traffic calming is to reduce vehicle speeds to encourage neighbourhood appropriate speeds and reduce the likelihood of collisions. A speed reduction to 40 km/h and/or installing speed limiting measures per the calming policy would have the potential to reduce the frequency and severity of pedestrian collisions.

- **Delineate pedestrian crossing**: Currently the roadway around the transition from Wilson Street East to Herriott Street has no delineated crosswalks or signage notifying drivers of crossing pedestrians. Creating a delineated pedestrian crossing with proper signage would raise drivers' awareness of potential conflicts, resulting in more cautious driving, and promote the crossing at a predefined location instead of a wider area. Depending on the number of pedestrians crossing and the vehicular volume at this location, different types of pedestrian crossings may be warranted including uncontrolled crossings, pedestrian crossovers, intersection pedestrian signals, or full traffic control signals. Ontario Traffic Manual (OTM) Book 15 – Pedestrian Crossing Treatments outlines the methodology for selection of pedestrian crossings, and which signage is recommended for each type of crossing. Signage includes "Pedestrian X", "Stop for Pedestrians", and a sign with a crossing pedestrian with flashing lights overhead indicating that a pedestrian is currently crossing.

- **Convert to one-way street**: It has been noted that a measure considered to improve safety in this area would be to convert the road configuration to a one-way street. Existing traffic data in the subject area has shown that the traffic volumes are relatively equal in both travel directions along Wilson Street East-Herriott Street, indicating that restricting movement in either direction may be difficult to justify. The conversion to a one-way street

in either direction may have other implications such as shifting traffic patterns and adversely affect traffic operations at adjacent intersections. Regardless of which direction the one-way was set, more traffic would be attracted to Gore Street, which would increase conflicts with pedestrian movements. Although additional on-street parking could be provided to calm traffic, previous parking counts identified sufficient parking is available in the downtown area.

The preferred pedestrian crossing location is approximately 50 m north of Herriott Street, at the connection point to the path in the adjacent park. To enhance the proposed pedestrian crossing, there are several options that can be used in combination:

Signage:

- Add "Sharp Curve" warning sign with a "30 km/h" advisory speed tab;
- Add regulatory (black and white) pedestrian crosswalk signs at the crosswalk location;
- Add "No Parking" signs to prohibit parking within 20 m of the crosswalk.

Pavement markings:

- Install a wider (20 cm) or double permanent (e.g. thermoplast) centerline marking;
- Install ladder-style crosswalk markings.

Landscaping:

- Install landscaping in the park that parallels the curb to discourage pedestrian crossings at other locations (which will also improve vehicle safety by making the curve more conspicuous)

Roadway design:

- Consider adding curb bulb-outs to improve conspicuity of the crosswalk and decrease crossing distance
- Remove the curb cut that is adjacent to the park and near the curve, or relocate it to the crosswalk area if it is required for maintenance vehicle access
- Prohibit parking within 20 m of the crosswalk

The locations of the improvements are illustrated below in **Figure 26**.

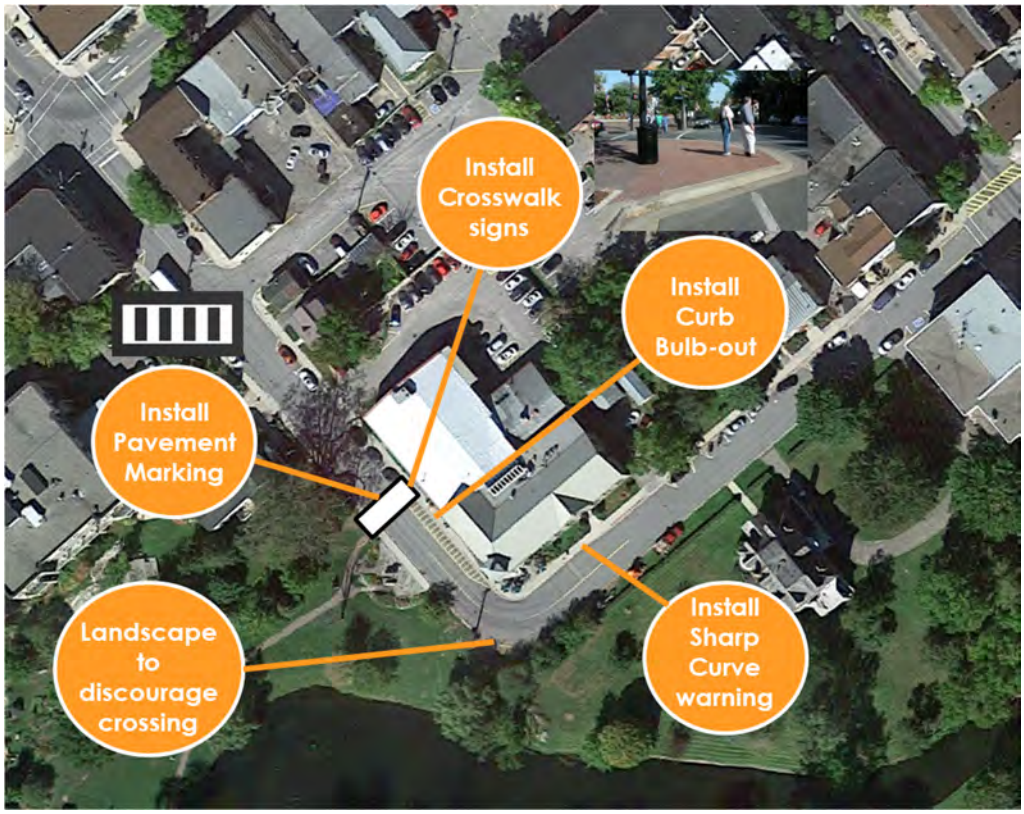


Figure 26 - Recommended Improvements for the Wilson/Herriot Street Curve

7.3 MULTI-MODAL ROUTES

Pedestrians and cyclists are complex user groups that represent a very wide range of ages, abilities and comfort levels. Facilities that are comfortable for one set of users may not be adequate for others. Conditions for cycling and walking in the Town of Perth are relatively comfortable for experienced users, however sharing the roadway with motor vehicles introduces concerns about comfort and safety for more vulnerable pedestrians and cyclists such as children, the elderly, or those with less experience.

Some cyclists are riding on sidewalks in the Town creating uncomfortable conditions for pedestrians and potentially dangerous conditions at driveways and intersections. Gore Street, Wilson Street and Drummond Street. are preferred by cyclists because they provide direct and continuous connections through the Town. These streets, as well as Highway 7 / Dufferin Street, and Sunset Blvd may be busier, less comfortable routes for pedestrians and cyclists, however they provide important access to community services and destinations.

An opportunity exists for the Town to provide a network of on-road and off-road active transportation routes and facilities to promote and support cycling and walking for local trips, support recreational opportunities for residents, and encourage more bicycle tourism in the Town. Network development opportunities include expanding existing trails and integrating these trails with the street network to provide additional access along the Tay River and in areas of new development; developing more sidewalks and bicycle facilities to create connected pedestrian and bicycle networks that will provide access to key community destinations; and providing wayfinding and end of trip facilities such as bicycle parking.

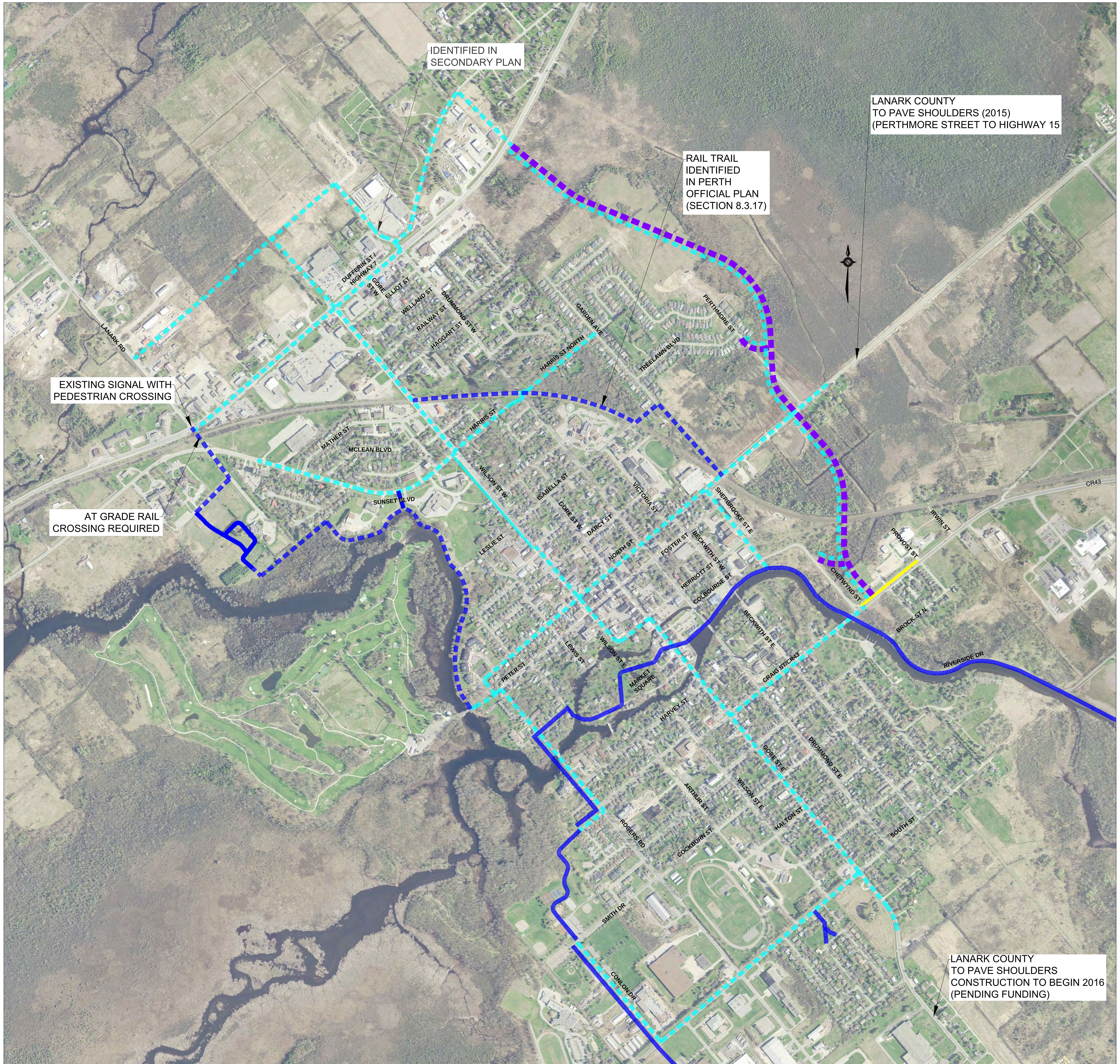
Figure 27 - Example of an existing trail in Perth

Opportunities exist for improving accessibility on existing trails where surface conditions, trail width, crossings and narrow or steep bridges may limit access to some users. Trail crossings at intersecting roadways also present barriers or challenges to trail users.

New trail connecting from existing trails on the Lanark County Administration site along the Tay River south to Peter Street is recommended, connecting to proposed cycling and pedestrian routes on Sunset Boulevard and Peter Street. Additionally, the existing footpath extending south from the intersection of Isabella Street and Garden Avenue is recommended to be upgraded to a multi-use pathway and link up with a new multi-use trail adjacent to the rail corridor between Wilson Street and Garden Avenue and provide a north-south route for pedestrians and cyclists on the east side of the town.

The recommended cycling network shown in **Figure 28** connects with County cycling facilities on County Roads 1, 10, 43, and 511 with bike lanes being proposed on major existing arterial roadways and the future NAR providing cross-town connections as well as regional connections. These bike routes should be standard on-street bike lanes to improve the safety and comfort of users.

The recommended pedestrian priority routes shown in **Figure 29** are a network of pedestrian pathways that predominantly include sidewalks that connect to Town and Regional trails as well as connections to all parts of Perth. They shall incorporate ladder-style pedestrian crosswalks when crossing streets and provide a good level of maintenance and upkeep to encourage and promote the safety of these routes for pedestrians and avoid motor vehicle conflicts.



LEGEND

- PROPOSED BIKE ROUTES
- PROPOSED TRAIL
- EXISTING BIKE LANE
- EXISTING TRAIL
- PROPOSED ARTERIAL ROAD
- EXISTING MULTI-USE TRAIL

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	MC	SK	MC	15.09.09
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

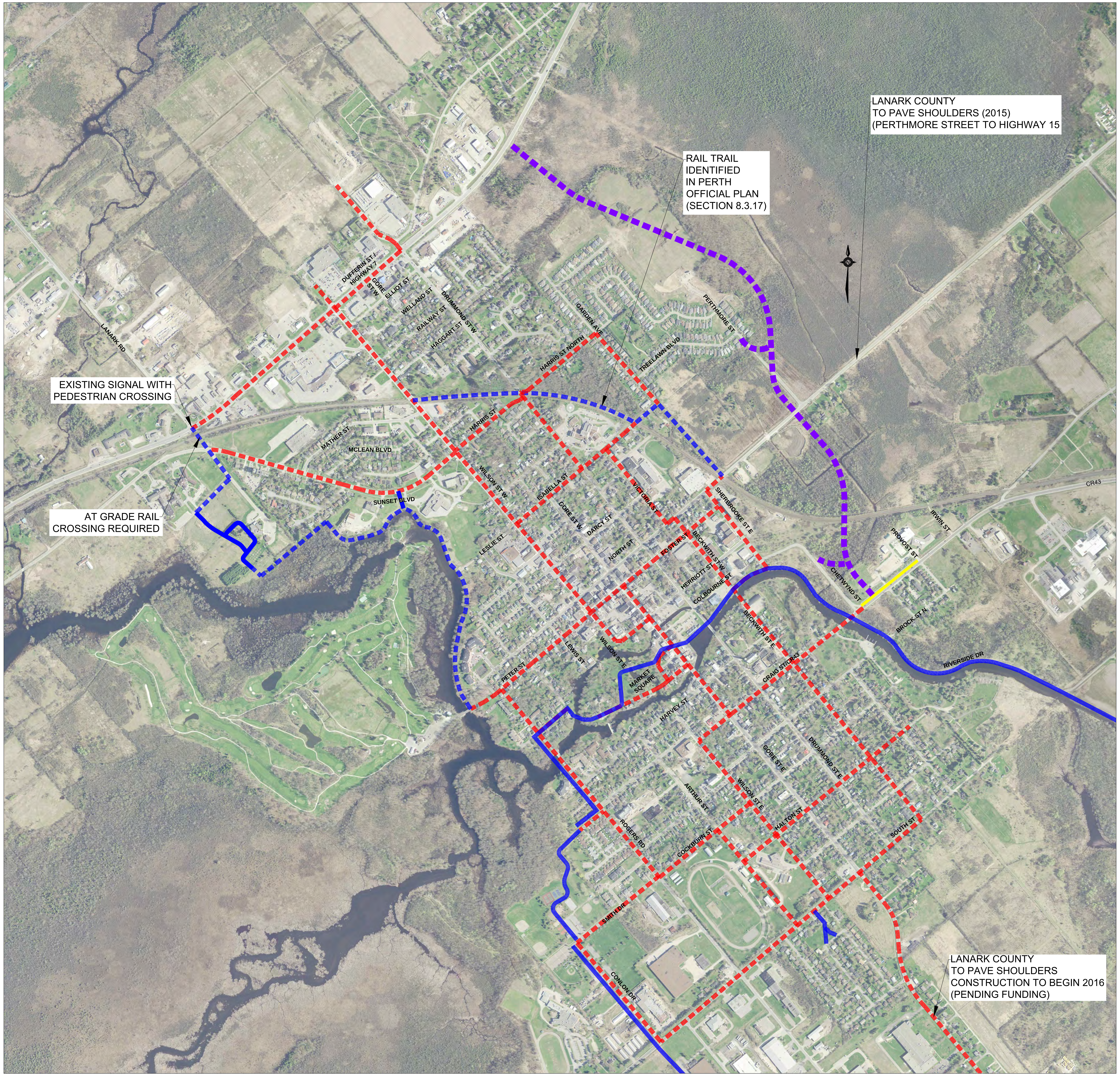
Municipal Transportation Master Plan

Title

FIGURE 28
BICYCLE NETWORK - CANDIDATE ROUTES

Project No.	Scale
165000919	1:7500

Drawing No.	Sheet	Revision
28	of	0



LEGEND

- PROPOSED PEDESTRIAN PRIORITY ROUTES
- PROPOSED TRAIL
- EXISTING TRAIL
- PROPOSED ARTERIAL ROAD
- EXISTING MULTI-USE TRAIL

Stantec

300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	MC	SK	MC	16.05.27
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title

FIGURE 29
PEDESTRIAN NETWORK - CANDIDATE ROUTES

Project No. 165000919

Scale 1:7500

Drawing No. 29

Sheet of

Revision 0

7.4 PARKING

Public parking is a strategic tool for community building and 'people friendly' downtown environments. By effectively managing its location, supply, and price, the Town can influence how people choose to travel and promote a behavioural shift from driving to walking and cycling. By providing public parking, the needs of stores, services, institutions, and tourism destinations where customers and visitors arrive in automobiles can be met in the most efficient manner. Public parking generally uses each parking space more efficiently than private (dedicated) parking because spaces are shared between users, and thus reduces the amount of urban land dedicated to the car. On-street parking supports businesses and helps build vibrant streetscapes.

7.4.1 Downtown Parking

During parking observations peak parking occupancy of existing parking supply within the BIA was at 65% during the week and 73% during the weekend. While the on-street parking was being well-utilized (87%) with good turnover, the off-street parking lots were being underutilized (67%). This indicates that there is available supply already at existing lots upon which existing and future parking can use. Concerns as a result of a recent development inquiry brought forward after field work was undertaken and other discussions involving the area of downtown around the Wilson Street & Foster Street intersection would require a further study of the parking constraints around the intersection to address concerns revolving development parking constraints and an adjustment in the service offerings at businesses in the area.

In terms of existing excess supply observed during field surveys, off-street lots are within a reasonable walking distance of the entire Downtown BIA meaning very few concessions in terms of walking to and from a destination after parking will be made by encouraging off-street parking usage.

Our observations indicated that many of these off-street parking lots did not have very comprehensive signage and are mostly hidden behind buildings. While this is ideal from an aesthetic and urban design perspective, the hidden nature of these lots reduces their visibility which leads to motorists opting for the more visible on-street parking.

To address this, we recommend replacing existing signage and wayfinding with newer and more visible signs throughout the BIA to direct drivers towards off-street lots and encourage their usage. Improved signage and wayfinding is an effective way to entice not just motorists looking for a parking lot, but also so that pedestrians can easily find their way back to their vehicle.

We recommend using the more familiar and larger "Green P" sign for parking with relevant directional tabs that is used in many municipalities across Canada. Most of this signage should be placed along Gore Street where on-street parking utilization is higher so that if there are no parking available on-street motorists will see the sign and be directed to the nearest off-street lot. In addition, signage should be placed at entrance points to the BIA such as on Wilson Street north of Foster or North Street east of Drummond to encourage motorists to go directly to an off-street

lot instead of looking for on-street parking along Gore Street. The recommended signage is illustrated below in **Figure 30**.

Figure 30 - Recommended highly visible Parking sign with direction tab

7.4.2 On-Street Parking

Concerns have been raised regarding a community mailbox located at the transition of Isabella Street to Garden Avenue. This mailbox often results in nearby residents parking beside the mailbox and creating a potentially dangerous environment for passing vehicles around the bend. The bend is at a 90-degree angle with poor visibility caused by residential homes.

No other viable areas for relocation of the mailbox could be found. It is recommended to add "no parking" signage south of the mailbox to discourage parking close to the bend. The location in concern is illustrated in **Figure 31** below.

As a further measure it is recommended the Town request comments on parking management in other areas within walking distance of the downtown as referenced in **Section 0**.

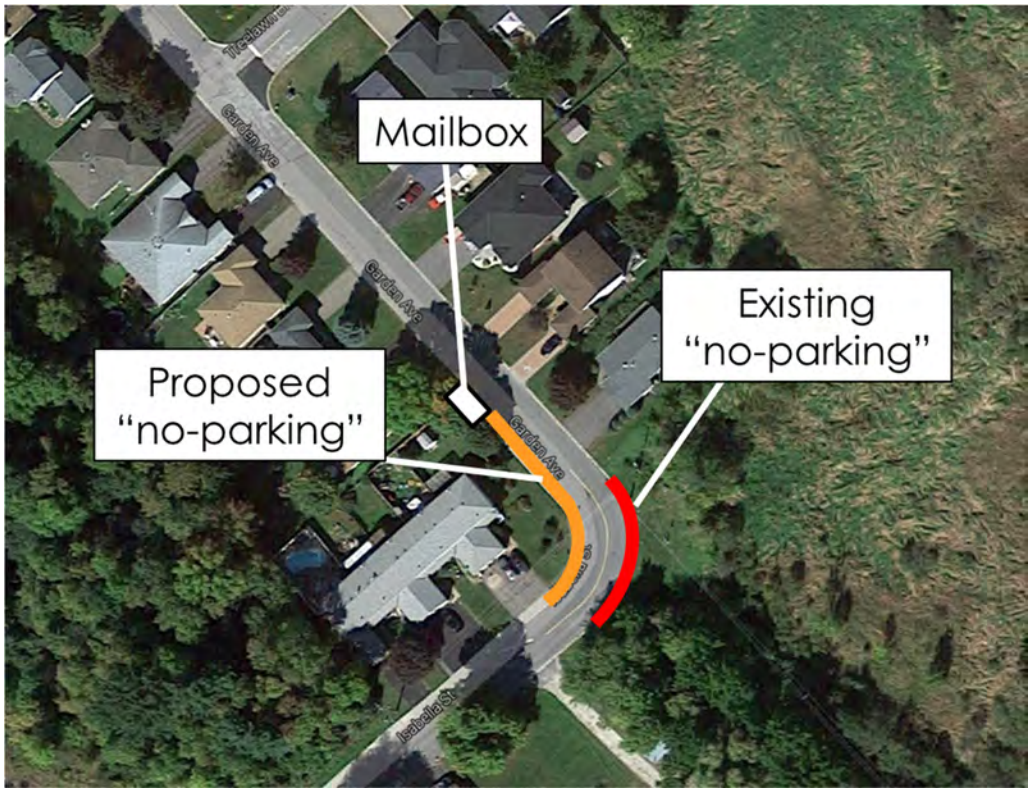


Figure 31 - Recommended "no-parking" zone at Isabella/Garden

7.5 SUMMARY OF RECOMMENDATIONS

7.5.1 Short-Term

Based on our analysis of traffic operations, safety, multi-modal transportation, and parking we have developed the following short-term recommendations to be implemented within 5 years:

Table 29 - Short-term Operational Recommendations

Recommendation	Justification	Details
Replacement of courtesy crosswalks with enhanced crosswalks and additional crosswalks study	Issues relating to visibility of the crossings, challenging sight lines, and signage that is inconsistent with other pedestrian crosswalks in nearby municipalities as well as the Ontario Traffic Manuals. Driver and pedestrian behaviours observed indicated a lack of understanding as to who legally has the right-of-way (per the Ontario Highway Traffic Act). Request from members of the public regarding potential crosswalks at three additional locations.	Level 2 Pedestrian crossover detailed in the *Ontario Highway Traffic Act* (Regulation 401/15, Section 8(1) p.1997-1998). The Level 2 pedestrian crossover adds improved signage, pavement markings and flashing lights to notify motorists when pedestrians are crossing the road. Further study to determine crosswalks warrants at three additional locations is required.
Implementation of safety features at: • Drummond St at Craig St; • Gore St at North St; • North St at Wilson St; • Wilson St/Herriott St Curve; • Isabella St/Garden Ave Curve.	Based on the limited data available, the relatively low number of accidents suggest that there is no acute safety performance issue at the intersections. However, there are numerous signage and marking strategies that can be implemented at the locations of concern that, in combination, can serve to increase the conspicuity of the intersections and therefore have some positive effect on safety performance and perception. At Isabella St/Garden Ave and Wilson St/Herriot St curves there were concerns about sightlines relating to the curve traffic movement.	• Add centerline markings at least 50 metres upstream of each approach; • Increase the width of stop bars from 300mm to 600mm; • Add the ladder-type crosswalk markings on all approaches; • Apply permanent (e.g. thermoplast) markings for any changes or additions to pavement markings; • Install larger STOP signs (i.e. 750mm rather than 600mm size); and • Install regulatory (black and white) pedestrian crosswalk signs at crosswalk locations. • Add 'No Parking' signs at Isabella/Garden curves to improve sightlines • Add Pedestrian crosswalk, shrubbery, and curb bulbouts at Wilson St/Herriot St Curve
Addition of Safety features to address speeding at: • Craig St/CR 43 between Provost and Irwin; • Sunset Blvd between Mather and George;	The first three locations were found to have an average speed greater than 15% above posted maximum speeds. The fourth location, Joy Avenue between Glascott Street and Leslie Street, has been identified	At speed transition areas "50 km/h Ahead" signage should be posted, with two sets of larger "50 km/h Maximum" signs posted at the location of the speed change. For all three of the locations identified must have an average speed > 15% above

Recommendation	Justification	Details
• Rogers Rd between South/CR10 and Cockburn/Smith; • Joy Ave between Glascott and Leslie.	by the Town as requiring traffic calming measures due to concerned residents.	posted max. speeds, permanent variable-message radar boards should be installed to indicate the posted maximum speed. This radar-detected speed can have some speed-reducing effects. At Joy Avenue add two sets of larger "50 km/h Max" and a road narrowing feature to calm traffic e.g. add parking (with roadway markings) to visually and physically narrow existing wide cross section and reduce speeds.
Truck route compliance signage & wayfinding	Based on a review of the 8-hour truck volumes: • 30-40% of trucks to/from Wilson Street travel along North Street, the remaining 60-70% of trucks travel along Gore Street; • 20-30% of trucks to/from Wilson Street travel along Foster Street despite North Street being the truck route; and • Slightly less than half of trucks to/from Craig Street/CR 43 use Craig Street despite Chetwynd Street being the truck route.	Recommendations to address concerns of heavy truck traffic through the Town include: • Use truck signs at two locations upstream of truck route turns on both sides of the road; • Use truck signs at one location downstream of the truck route on one side of the road to confirm route choices; and • Add tabs to signs for number of axle, weight, or seasonal restrictions. These recommendations are the minimum to improve truck route compliance. In addition to these it is recommended adding signs at the locations detailed in **Table 18** and mapped in **Figure 14**.
Signage & wayfinding to improve off-street parking utilization in the downtown BIA	During parking observations peak parking occupancy of existing parking supply within the BIA was at 65% during the week and 73% during the weekend. While the on-street parking was being well-utilized (87%) with good turnover, the off-street parking lots were being underutilized (67%). This indicates that there is available supply already at existing lots upon which existing and future parking can use. Further to this point, existing off-street lots are within a reasonable walking distance of the entire Downtown BIA meaning very few concessions in terms of walking to and from a destination after parking will be made by encouraging off-street parking usage.	We recommend using the more familiar and larger "Green P" sign for parking with relevant directional tabs that is used in many municipalities across Canada. Most of this signage should be placed along Gore Street where on-street parking utilization is higher so that if there are no parking available on-street motorists will see the sign and be directed to the nearest off-street lot. In addition, signage should be placed at entrance points to the BIA such as on Wilson Street north of Foster or North Street east of Drummond to encourage motorists to go directly to an off-street lot instead of looking for on-street parking along Gore Street.

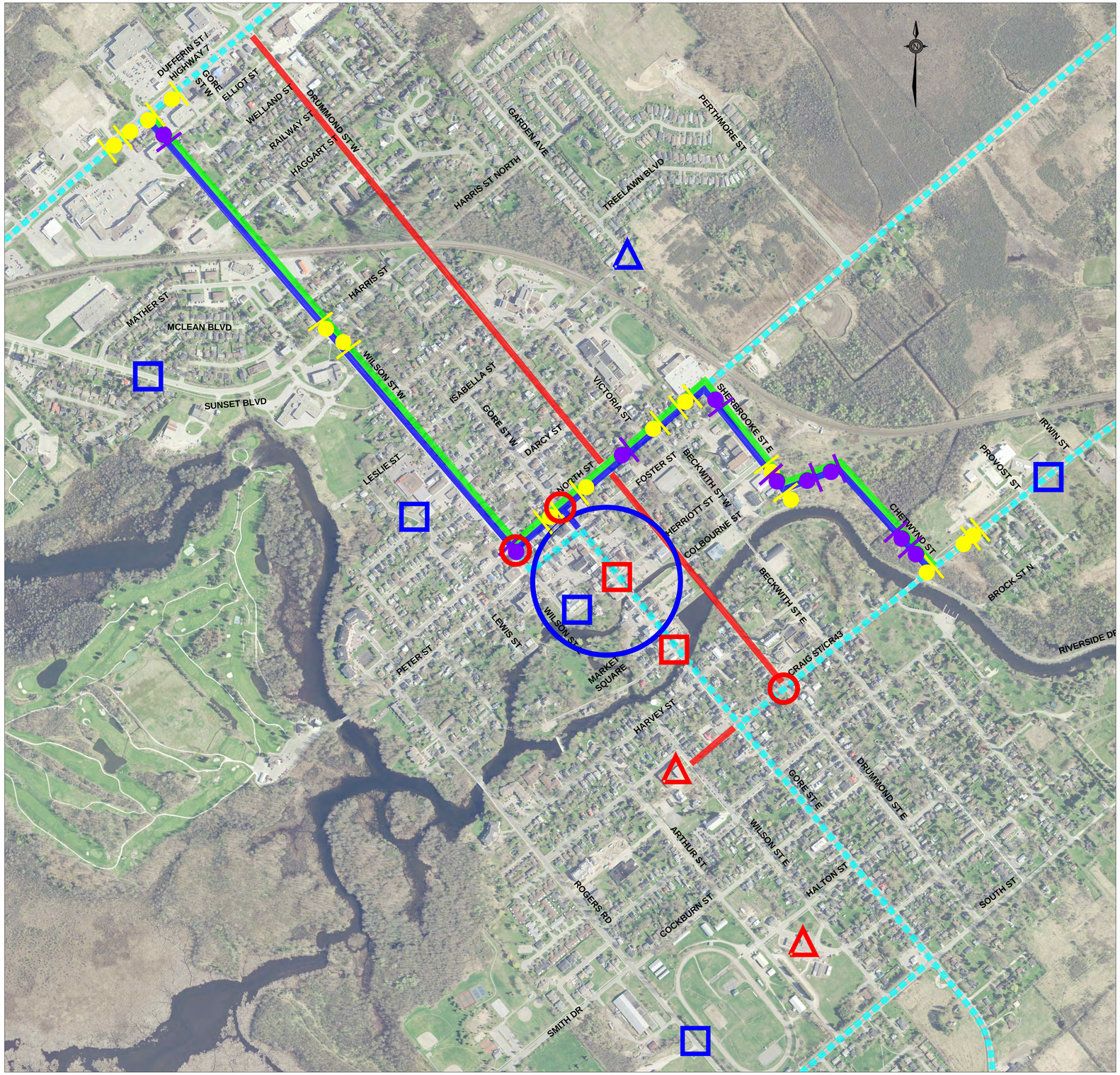
7.5.2 Medium to Long-Term

There are several infrastructure improvements we've recommended based on modelling future traffic conditions and address concerns regarding pedestrian and cycling safety. The following are medium to long-term improvements that should be implemented between 5-10 years for the multi-modal routes, and beyond 10 years for the Craig Street bridge replacement and new arterial road construction.

Table 30 - Medium to Long-term Operational Recommendations

Recommendation	Justification	Details
Multi-modal routes including: • Bike lanes on various roadways • Multi-Use trails • Pedestrian Priority routes	Conditions for cycling and walking in the Town of Perth are relatively comfortable for experienced users, however sharing the roadway with motor vehicles introduces concerns about comfort and safety for more vulnerable pedestrians and cyclists such as children, the elderly, or those with less experience. Some cyclists are riding on sidewalks in the Town creating uncomfortable conditions for pedestrians and potentially dangerous conditions at driveways and intersections. Gore Street, Wilson Street and Drummond Street. are preferred by cyclists because they provide direct and continuous connections through the Town. These streets, as well as Highway 7 / Dufferin Street, and Sunset Blvd may be busier, less comfortable routes for pedestrians and cyclists, however they provide important access to community services and destinations.	Construction of bike lanes multi-use trails and pedestrian priority routes detailed and visualized in **Figure 28** and **Figure 29.**
Craig St Bridge Replacement	The Craig Street bridge is to be rehabilitated in the next few years, which will extend the structural life of the bridge by 25 years. Approximately 2/3 of the funding for the rehabilitation has been received from the Province and the Federal government. Due to the height of boat traffic	Recommendation for an Environmental Assessment evaluating replacement of the Craig Street bridge which includes the option of the South Street bridge subject to construction of the new Arterial road.Craig St and create better regional connections via South St/Scotch Line.

Recommendation	Justification	Details
	the bridge will eventually need to be replaced. Potential benefits to directing truck traffic away from the Craig Street/Gore Street Intersection, improved access and connection between the industrial park and the future arterial road, as well as the creation of better regional connections via South St/Scotch Line. Analysis identified no major issues for future traffic if bridge was replaced.	
New Arterial Road	The future transportation network was modelled with and without the New Arterial Road (NAR). The following is a summary of the differences: • In comparison to the operational analysis results for the future horizon with the NAR provided, several study area intersections will be impacted. That being the overall intersections and specific movements will be further exacerbated and are anticipated to operate poorly under the 2041 horizon; and • The new arterial road (NAR) provided an additional north-south link. Without this additional transportation corridor, the site traffic from future developments would be distributed throughout the study area intersections and further impact them to reach Highway 7 to the north, and Craig Street or South Street to the south; Specifically, site traffic from the Perthmore Glen and the Tayview Lands residential developments;	Construction of a new Arterial Road between Highway 7 and CR 43 in the east end of Town.



LEGEND

- SIGNED TRUCK ROUTE
- DESIGNATED TO PROVIDE TRUCK ACCESS
- SIGNED TRUCK PROHIBITION
- OVERSIZED TRUCK ROUTE

- POLE
  - PROPOSED SIGN (ATTACHED TO EXISTING POLE)
  - FACE OF SIGN
- POLE
  - PROPOSED SIGN (WITH NEW POLE)
  - FACE OF SIGN
- INTERSECTION SAFETY IMPROVEMENTS
- ENHANCED PEDESTRIAN CROSSWALKS
- NEW COMMUNITY SAFETY ZONES
- SPEED-RELATED SAFETY IMPROVEMENTS
- ADJUSTED ON-STREET PARKING
- DOWNTOWN OFF-STREET PARKING SIGNAGE & WAYFINDING IMPROVEMENTS

NOTE:

1) FOR SIGN INFORMATION, REFER TO THE DETAILED TABLE PROVIDED IN REPORT.

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision		By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS Dwn.	SK Chkd.	CS Dsgn.	15.02.02 YY.MM.DD

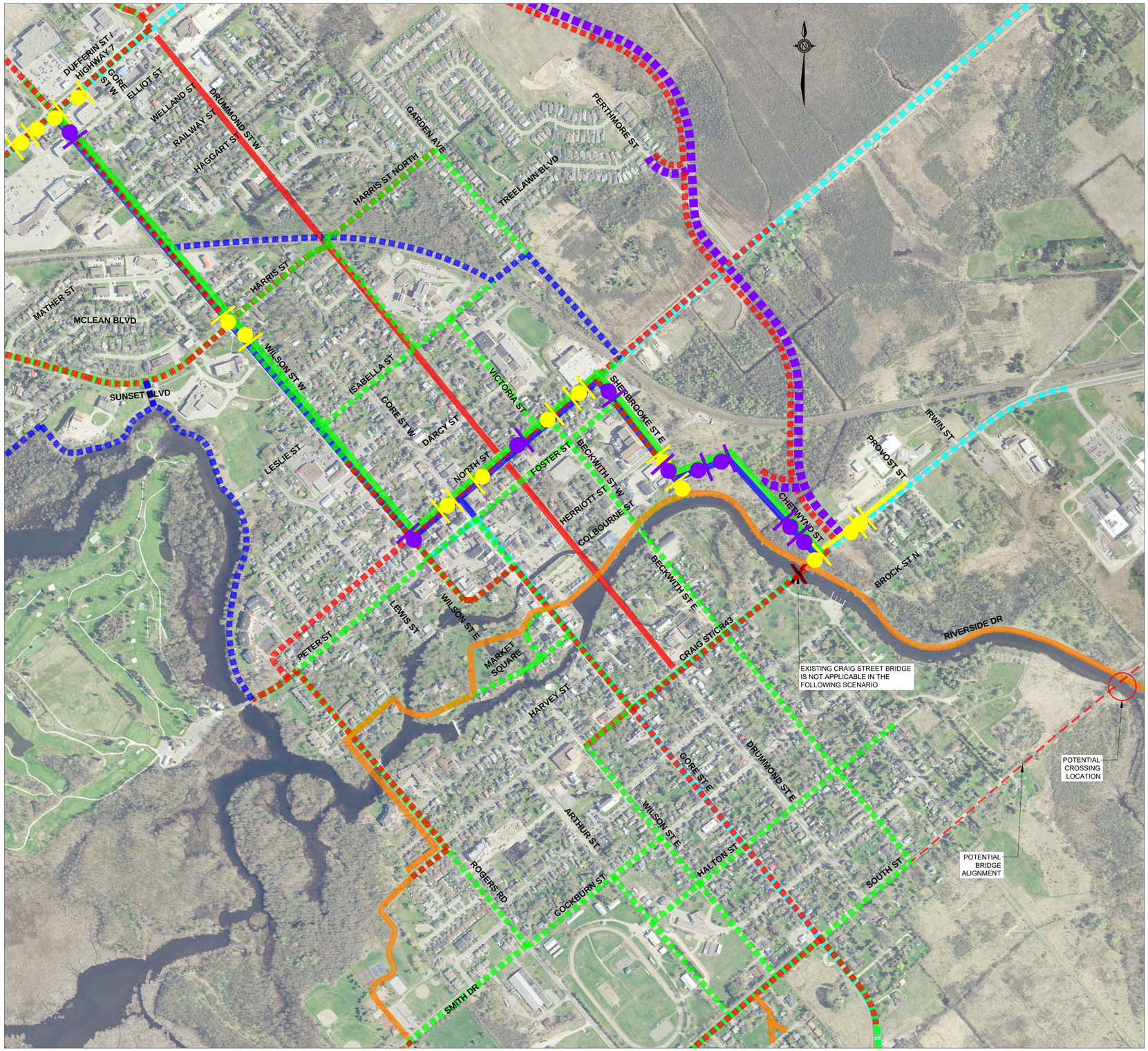
Permit-Seal

Client/Project
The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title
FIGURE 32
SHORT TERM IMPROVEMENTS

Project No.	Scale	
165000919	1:5000	
Drawing No.	Sheet	Revision
32	of	0



LEGEND

- SIGNED TRUCK ROUTE
- DESIGNATED TO PROVIDE TRUCK ACCESS
- SIGNED TRUCK PROHIBITION
- OVERSIZED TRUCK ROUTE
- PROPOSED BIKE ROUTES
- PROPOSED TRAIL
- EXISTING BIKE LANE
- EXISTING TRAIL
- PROPOSED ARTERIAL ROAD
- EXISTING MULTI-USE TRAIL
- PROPOSED PEDESTRIAN PRIORITY ROUTES

POLE
PROPOSED SIGN (ATTACHED TO EXISTING POLE)
FACE OF SIGN

POLE
PROPOSED SIGN (WITH NEW POLE)
FACE OF SIGN

NOTE:

1) FOR SIGN INFORMATION, REFER TO THE DETAILED TABLE PROVIDED IN REPORT.

Stantec
300-675 Cochrane Dr., West Tower
Markham, ON L3R 0B8
Tel. 905.944.7777
www.stantec.com

Notes

Revision	By	Appd.	YY.MM.DD
File Name: fig_00919_20160526_report.dwg	CS Dwn.	SK Chkd.	CS Dsgn.	15.02.02 YY.MM.DD

Permit-Seal

Client/Project
The Corporation of the Town of Perth

Municipal Transportation Master Plan

Title
FIGURE 33
MEDIUM / LONG TERM IMPROVEMENTS

Project No.	Scale	
165000919	1:5000	
Drawing No.	Sheet	Revision
33	of	0

8.0 POLICY RECOMMENDATIONS

Policies and guidelines are developed through the TMP process to support implementation of the preferred transportation strategy. These supporting polices will assist the Town as it implements the recommendations of this Plan and will guide future decisions pertaining to transportation system maintenance and development for all travel modes. The TMP supporting policies are in turn supported by the Town's overarching policy framework including the Official Plan, Strategic Plan and Downtown Perth Community Improvement Plan; and include the necessary provisions for the Growth Plan for the Greater Golden Horseshoe, Lanark County Regional Official Plan and Lanark County Transportation Master Plan.

8.1 UPDATES TO THE TOWN OF PERTH OFFICIAL PLAN

Transportation policies in the Town of Perth Official Plan are critical to supporting the development of a multi-modal transportation system. Opportunities to further update the transportation policies of the Town of Perth Official Plan (2014) should be investigated in the next Official Plan Five Year Review.

The updated plan should consider policies the following policy changes:

- Consider policy changes promoting pedestrian access to all streets within the Town boundaries which is consistent with existing policies supporting walking, compact urban form and mixed-use development and in accordance with the Provincial Policy Statement (2014).
- Sidewalks are to be included on both sides subject to available funding (5.5.7). Intersections of arterial roads or an arterial road and a collector road are expected to include traffic circles (roundabouts) or centre medians along all approaches. Drummond Street is designated a secondary arterial to recognize the existing function of the roadway, however road widening along this corridor is to be avoided in residential areas unless required to improve traffic safety.
- Collector roads (5.5.3) are designated with a right-of-way width of 20-26m and may or may not have a median (if a median is present right-of-way widths may increase to 35m). Speed limits are to be set between 50 and 60 km/hr.
- Update to require sidewalks on residential streets (Sidewalks constructed to an appropriate standard may be constructed on one side for any local road or collector and on two sides for any arterial road (subject to the availability of funds). Section 5.5.7: Sidewalks).
- Add bicycle facilities – update language in Section 5.5.9 Recreational Trails "reserve lane" to recognize up to date design guidance and facility types.
- 5.5.10 – update pedestrian and vehicular rights of way to include bicycles.

8.2 ACTIVE TRANSPORTATION

8.2.1 Transportation Demand Management

Transportation demand management (TDM) is the application of strategies and policies to reduce travel demand, or to redistribute this demand. Managing demand can be a cost-effective alternative to increasing capacity as well as the potential to deliver better environmental outcomes, improved public health, stronger communities, and more prosperous towns.

Many municipalities are incorporating TDM into municipal policy as part of an effort to promote a multi-modal transportation network. The transportation vision for the Town of Perth is of a safe, sustainable, and multi-modal transportation system. The inclusion of TDM policy encourages residents, developers and businesses to incorporate TDM measures either through future development, re-development, or policy amendments.

There are already some bits of TDM approaches included in the Town of Perth Official Plan. Section 9 – Implementation Tools; 9.12.11 Cash-in-Lieu of Parking reads "It is Council's policy to utilize Section 40 of the Planning Act to increase the amount of available off-street parking in the Central Area District; particularly to accommodate business expansion, intensification or in the event peak parking demand exceeds or results in occupancy of public parking facilities regularly exceeding 75%."

This policy addresses the strategy of not blindly continuing to expand parking supply, but rather tailor it to meet demand. Another common TDM policy is to encourage minimum parking rates or reduce parking requirements based on the inclusion of a carpooling space, bike parking or proximity to transit. There are opportunities to take existing policies such as the one above and roll them into a TDM policy for the Town. It is recommended that the Town develop a TDM policy to address future parking demand and trip generation from new developments.

8.2.2 Sidewalk Strategic Plan

The Town's Strategic Plan, Initiative #7 promotes development of cycling services to complement the new pathways initiative – Action A) engage the business sector in discussions about the proposed cycling pathways initiative, B) promote the new pathways initiative to the public, C) provide information to cycling tourists, D) To partner with existing successful Cycling Organizations (Ontario by Bike, Mississippi Mills Bike Month) to learn and utilize best practices;

It is recommended that the Town complete a Sidewalk Strategic Plan to create a process to prioritise sidewalk projects within the Town, including new sections of sidewalk, and ramps on existing sidewalks, and missing sections of sidewalk in existing developments.

8.2.3 Accessibility for Ontarians with Disabilities Act (AODA)

All new and redeveloped sidewalks and multi-use trails are required to be designed in accordance with Accessibility for Ontarians with Disabilities Act, 2005. Standards for the design of public spaces are provided in Part IV.1 of the Ontario Integrated Accessibility Standards Regulation 191/11 and include a 1.5m minimum clear width for sidewalks (1.2m at curb ramps) and 1.0m minimum clear width for recreational trails. Multi-use trails identified in this Plan are intended for the use of both cyclists and pedestrians and for both transportation and recreation. Current best practices in trail design call for 3.0m minimum width for bidirectional trails that are used by both pedestrians and cyclists. Further guidance is available in the Illustrated Technical Guide to the Accessibility Standard for the Design of Public Spaces.

8.3 OVERSIZE/OVERWEIGHT LOADS

Oversize/overweight truck loads are any load that exceeds the dimensions and weight limits set out in the Provincial *Highway Traffic Act*. They put physical strain on transportation infrastructure that could translate into expensive costs associated with the upkeep and maintenance of these facilities. While they do strain the infrastructure they travel on, the reality is that they are often a necessity for the movement of certain products and must be planned for appropriately. As such it is important that the Town of Perth develop a policy and route that can physically accommodate these vehicles to minimize the impacts on the community.

The Town of Perth does not currently have an oversize load policy, however there is policy in the *Highway Traffic Act* as well as municipal policies being used in local municipalities such as Lanark County and Mississippi Mills. These policies stipulate what type of loads are classified as oversized as well as what the requirements are for allowing these loads to be transported through their jurisdiction.

8.3.1.1 Ontario Highway Traffic Act

Carriers must apply for permits to operate or transport oversized or overweight vehicles and loads. Carriers are responsible for following all permit conditions to ensure their vehicles operate safely on Ontario's King's highways. An oversize/overweight load is any vehicle that does not comply with the dimension and weight limits as defined in the *Highway Traffic Act (1990) O.Reg. 413/05: Vehicle Weights and Dimensions – For Safe, Productive and Infrastructure-friendly Vehicles*.

Permits are issued for oversize vehicles or loads if they cannot be reduced in size or would:

- Be unable to perform the function for which they were intended;
- Be unusable for their intended purposes;
- Require more than eight work hours to dismantle using appropriate resources and equipment.

8.3.1.1.1 Limitations

The availability of an oversize/overload policy does not mean any oversize load can obtain a permit there are limitations:

- **Overheight**
  - The load must not be made up articles loaded or mounted on top of each other in a way that will create additional height.
- **Overwidth**
  - The load must not be made up articles loaded or mounted side by side or crosswise in a way that will create additional width.
- **Overlength**
  - The load must not be made up articles loaded or mounted one behind the other in a way that will create additional length;
  - Any overhang to the rear must not exceed 4.65 m from the centre of the rearmost axle.
- **Overweight**
  - The load must not be made up of more than one article;
  - When crossing bridges, vehicles over 45,000 kg gross weight must be operated at the lowest practicable speed;
  - Bridge postings and load restrictions pursuant to Part VII of the *Highway Traffic Act (1990)* apply.

8.3.1.1.2 Types of Permits

There are four types of oversize/overweight permits that are in place to: harmonize configurations, weights and dimensions with those of any other jurisdiction, allow for a trial of a vehicle, and allow for a variance from a limit within a specific geographical area. Each permit has specific conditions that must be strictly adhered to.

8.3.1.1.2.1 Annual permits

Annual permits are used for repeat trips with oversize/overweight vehicle and/or loads to maximum and weights and dimensions. They are valid for 12 months from the date of issue on all King's highways.

8.3.1.1.2.2 Project permits

Project permits are issued to allow carriers operating under the terms of a contract, to move similar loads, objects, and structures over the same specified route for a period up to and including six months, depending on the duration of the contract. The weights and dimensions provided must

be specific to the load. The weights and dimensions specified on the permit are those of the load, not the maximum limit.

8.3.1.1.2.3 Single trip permits

A single trip permit is issued for a one-way trip along a specified route for a limited period. A carrier must apply a minimum of 3 business days prior to the proposed move date to allow the Permit Issuing Office sufficient time to process the permit request.

Superloads

Superloads exceed most permit dimension and weight limits. Permit applications for Superloads of 6 metres or greater must include justification that demonstrates the necessity of transporting the loads on the province's highways, and require extra time and documentation. These loads will be subject to a thorough review by the ministry's Weight and Load Engineer, as well as various senior ministry management personnel.

Those considering Superload moves should consult with the Permit Issuing Office in the early planning stages. A carrier must submit their application a minimum of 5 days prior to the proposed move date due to the more involved approval process. Complex operations may take as many as 6 months to fulfill all requirements.

For gross vehicle weights exceeding 120,000 kg, carriers will need to submit an evaluation by a qualified engineer to evaluate the bridges on their route for ministry approval.

8.3.1.1.2.4 Special vehicle configuration permits

Special vehicle configuration permits are issued for vehicles with unique weights or dimensions that vary from the *Highway Traffic Act (1990)* and other regulation. They are subject to economic, infrastructure and safety assessments by the applicant, to prescribed ministry standards.

8.3.1.2 Lanark County

The County of Lanark has an oversize/overweight load policy that requires carriers to notify them by means of an oversize/overweight load permit application. Oversize/overweight loads are defined as a load exceeding the limits prescribed by the *Highway Traffic Act (1990)* and is being transported utilizing a road under the jurisdiction of the County of Lanark.

The policy says that Provincial Highways should be used rather than County Roads unless an applicant provides a written explanation for why Provincial Highways are not feasible. Simply having a Provincial oversize/overweight permit is not sufficient justification to use County Roads.

8.3.1.2.1 Types of Permits

There are two types of permits offered by Lanark county depending on the type and frequency of trips that the oversize/overweight loads will be making

Annual Permit

An annual permit is valid for a 12-month period on all County roads.

Single Trip Permit
A single trip permit is issued to facilitate an oversize/overweight move for a one-way trip along a specified route for a limited time period.

8.3.1.3 Recommendations

We recommend amending Town policy to include an oversize load system with wording to the effect of "*the Town requires notification, by means of an application for oversize/overweight load permit, any time a load that exceeds the limits prescribed by the Highway Traffic Act is being transported on roads under the jurisdiction of the Town of Perth.*"

Considering the interconnected relationship between Lanark County and the Town of Perth it is recommended that Town policies align with those of the County so that synergies between the Town's policy and routing can work and link with the County's. The benefits are twofold; to ensure there isn't any confusion between how to navigate truck routing between each jurisdiction, as well as reducing the difficulty for carriers in understanding what is required of them and improve compliance.

The Town's oversize/overweight policy should include and amend many of the requirements/restrictions from Lanark County and the Province including:

- Requiring written acceptance from the Town;
- Insurance Coverage;
- Liability for damages;
- Traffic control during movements or escorts;
- Must use designated oversize load route.

These requirements will empower the Town to make decisions regarding oversize/overweight loads and to protect them in the case of any accidents or damages that result from the movement of an oversized/overweight load.

8.4 SAFETY

8.4.1 Speed Limits

The Ontario Highway Traffic Act (Section 128.1) states that roads within a town or built-up area have a speed limit of 50 km/hr, unless signs are posted to indicate otherwise. In 2015, the province initiated consultation with municipalities and members of the public on reducing the default speed limit to 40km/hr leaving municipalities with the ability to adjust this for specific neighbourhoods. The results of this consultation have not been published to date. Speeds of 50km/hr can create uncomfortable and potentially unsafe conditions for cyclists and pedestrians, particularly in densely populated areas, residential neighbourhoods or locations where there is

significant pedestrian or bicycle activity. As a result, some municipalities have chosen to limit speeds to 40km/hr on arterial, collector and local streets.

Municipal public health authorities are increasingly advocating for lower speed limits and point to international research showing exponential increases in severe injuries and fatalities as motor vehicle speeds increase. A 2010 study conducted by the Deputy Chief Coroner of Ontario, cited similar statistics stating that a collision between a pedestrian and a vehicle travelling 50 km/hr is five times more likely to be fatal than if the vehicle is travelling at 30 km/hr. This study recommended that Ontario municipalities adopt a Complete Streets approach to community development (designs that provide safety, convenience and comfort for all users, including all transportation modes, physical abilities and ages); and consider reducing speed limits to 30km/hr on residential streets and 40km/hr on other streets unless posted otherwise. Some Ontario municipalities have reduced speed limits in specific areas including the City of Toronto where speed limits on local roads within the Toronto and East York community council districts were reduced from 40 km/hr to 30 km/hr in 2015. In addition, the reduction of speed limits in developing residential areas would promote a "Complete Streets" approach for design of roads and possibly for existing streets as they are reconstructed.

8.4.2 Community Safety Zones

There are currently two Community Safety Zones (CSZs) in the Town of Perth. The Town is interested in additional CSZs at Queen Elizabeth School and St. Johns Elementary School. CSZs increase fines within them and increase safety and comfort for pedestrians and students.

A CSZ is designated on a section of roadway where a community has determined that public safety is of particular concern. These may be sections of roadway near a school, daycare centre, park, hospital or a seniors home where pedestrian / bicycle activity is higher and/or includes vulnerable pedestrians like children or the elderly; or it may include a location where there has been a history of collisions demonstrating a safety concern. Typically, a municipal bylaw is established to specify the area where fines for speeding have been increased and the hours, days and months when the community safety zone designation is in effect. Regulatory signage is then put in place to delineate the CSZ.

The Ontario Traffic Manual Book 5 recommends that documented evidence of a safety concern be provided prior to designation. The size of the zone must take into consideration the observed safety concerns and the ability of police to effectively enforce any violations. The number and location of Community Safety Zones must also be considered in terms of enforcement, where zones are too numerous or too frequently spaced, this may create further difficulty for enforcement. As a result, input from local police is recommended.

The designation of a Community Safety Zone is the responsibility of the municipality based on the guidance provided in OTM Book 5. This guidance, summarized above, does not include specific criteria or warrants to determine the appropriateness of designating a CSZ. In order to ensure that these zones are respected by motorists and applied where needed, it is recommended that

the Town develop specific criteria to assess requests or concerns raised with respect to designating new CSZs. Regional and local municipalities have developed warrant criteria to assist with the designation of CSZs.

For example: York Region has developed two separate warrants for Community Safety Zones: Designated Areas of Special Consideration; and Safety Performance. Both must be met in order to complete a CSZ designation. Designated Areas of Special Consideration include:

- Community centres;
- Elementary or secondary schools;
- High pedestrian traffic locations (100 pedestrians per hour or more over 8 hours); or
- Seniors' centres and residences.

Safety Performance includes an assessment of collision and risk factors including:

- Collision rates;
- Posted speed;
- Daily traffic volumes;
- Number of lanes;
- Length of sidewalks;
- Pedestrian volumes; and
- Intersections and entrances per kilometre.

Responses to requests for CSZs from the public in smaller communities such as Mississippi Mills have included coordination with provincial police to conduct speed surveys in the area of concern to determine if speeding is a hazard that must be addressed.

Evaluation of the effectiveness of CSZs has been undertaken through in-house evaluation studies by the City of Toronto, City of Ottawa, City of Kingston and other municipalities. These studies have demonstrated a limited capacity of signage alone to reduce driver speeds without constant enforcement by police. Some jurisdictions have stopped designating CSZs as a result of these findings; others have limited the areas of concern to specific types of land use such as schools. The study conclusions are consistent with the Canadian Guide to Neighbourhood Traffic Calming (1998) which states: "Reduced maximum legal vehicle speeds used as traffic calming measures may not be effective and may create compliance problems. Raised crosswalks or speed humps would be more effective in reducing vehicle speeds." An update to this national guide is expected in 2016.

The existing traffic calming policy does not explicitly refer to school zones, but rather operational metrics to determine the needs for traffic calming measures. There were no concerns with speed limit safety at Queen Elizabeth School and St. Johns Elementary School, however, it is

recommended that the Town provide a unified policy regarding school zones which is an appropriate land use to designate as a special concern area for traffic calming measures. The additional signage and higher monetary penalties for traffic violations associated with CSZs would likely reduce speeds by some degree and thereby improve safety.

It is also recommended that the inclusion of schools as a criteria for CSZs be coordinated as part of a broader traffic calming policy developed with a view to the preferred transportation solution for the Town as a whole. Speed limits and community safety zones are only two elements of traffic calming. Methods, criteria and guidelines for calming traffic in locations deemed as a priority should be considered.

8.5 ENTRANCE PERMITS

A small number of property owners have constructed accesses from private property to public property such as roads, paths, laneways, etc. without approval by the Town. Without review and approval by the Town, modifications that impact public property can negatively impact safety, traffic operations, maintenance requirements, and life-cycle costs.

Other municipalities such as Lanark County, Town of Mississippi Mills and the Township of Drummond/North Elmsley have entrance permit policies. The Town currently reviews entrances on a case-by-case basis. The implementation of a policy would provide a framework for controlling and maintaining existing property accesses, ensuring improper new accesses are not being created, and to facilitate enforcement efforts.

An excerpt from the County of Lanark's Official Plan section 9.12 PLANNING ACT; 9.12.15.2 (Consents) (7) reads:

"Where the lot proposed fronts on a provincial highway, prior approval must be obtained for access from the Ministry of Transportation. Also, where the Ministry has identified the need for a road widening, the necessary land shall be dedicated as a condition of approval and comparable approval shall be obtained from the County of Lanark for lots fronting onto a County Road"

It is recommended that the Town amend similar wording regarding entrance permits as that of Lanark's Official plan and include Town by-laws with wording to the effect of "any works, whether temporary or permanent, that physically impact and/or modify the public right-of-way must be explicitly approved in writing by the Town before any construction activities begin." This would include the construction, modification, or removal of driveways, subsurface or above-ground utilities, landscaping, pathways, and sidewalks, and would exclude maintenance activities such as snow removal and catch-basin grate cleaning.

8.6 PARKING DEFINITION

The current maximum parking by-law length of time definition is 12-hours which was changed from 4-hours in 2007. There are concerns that some residents are abusing this system to park their vehicles on-street for extended periods of time. This has resulted in complaints from residents about lost visitor parking and obstructed driveways.

Several related issues have arisen due to the change in parking limit length such as:

- The removal of free parking from the Perth & District Community Centre which has increased demand for on-street parking on Foster Street, North Street, Beckwith Street, and the surrounding areas.
- At the Great War Memorial Hospital there are concerns that employees are using on-street parking instead of the off-street parking at the hospital. The Hospital has exclusive control over the policies and fee structures for use of its main parking areas. The Town leases the pay and display equipment for the front, short-term, parking lot and enforces its operation for the hospital.
- The Town Fair also presents challenges with long-term parking issues. The Perth Fair operates for 4 days each year over the Labour Day weekend. During this time, fairgoers park on the residential streets adjacent to the fair, of which many are signed with on-street parking prohibitions. Unless a complaint is received (e.g. for a vehicle blocking a driveway), the situation has historically been tolerated.

The Town is intent on addressing this issue by determining what the definition of a reasonable parking time limit is. Many municipalities in Ontario use 3-4 hours as a typical maximum limit for on-street parking. This is typical placed in conjunction with a parking permitting system that allows citizens to get extended parking permits beyond the 3-4-hour limit. Currently, the Town of Perth can give parking permits to allow parking past posted by-law limits.

Based on our analysis, the GWM Hospital employees and visitors are using the current extended 12-hour limit parking definition to avoid paying parking fees directly at the hospital. There is currently adequate off-street parking at the Hospital for employees, with a competitive price of $4/day compared to $8/day for a typical 8-hour day at municipal lots.

It is recommended to change the on-street parking to a 3-hour limit where an off-street parking facility is within 400 m of the on-street parking in question. This would allow the Town to manage parking limits based on a supply and needs basis as opposed to a general blanket policy that covers the entire municipality. This would improve the utilization of off-street parking facilities by forcing long-term parkers to seek out appropriate off-street parking to avoid getting a by-law ticket as well as allowing the facilities to be used as intended for short term visits. Areas further than 400 m away from a publicly accessible off-street lot should be changed to 6-hour weekday parking limit and a 12-hour weekend limit to give a bit more flexibility to users. For areas in proximity

to the Town Fair a parking by-law exception can be imposed during the dates that the fair is typically held on.

These recommendations should be implemented along with an education campaign about the temporary permit system which allows users to request an extended parking permit.

8.7 RECREATIONAL VEHICLES

Recreational vehicles such as all-terrain vehicles (ATV) and motorized snow vehicles (snowmobiles) have passage through other communities in Lanark County, but not through the Town of Perth except for an existing snowmobile trail northerly of Highway 7. The Town has advised that snowmobiles occasionally use the Tow Path and the Tay River corridor to access the downtown commercial area. Town staff have also advised of recent inquiries from ATV clubs seeking routes to access accommodation, food services, and gas bars along Highway 7.

Other municipalities such as the Town of Smiths Falls and Town of Carleton Place allow snowmobiles but place restrictions on the roadways they can use, maximum speeds and the time of use. Due to the urban nature of Perth's built-form It is recommended that ATVs and snowmobiles continue to be prohibited from Town roads, however the snowmobile trail north of Highway 7 should be maintained even with future development. ATV access to services along the northerly side of Highway 7 could also be ensured during the development of the Secondary Plan area and the expected connecting road between Wilson Street and County Rd. 511.

8.8 SUMMARY OF RECOMMENDATIONS

Our review of local and regional policy has outlined several policy recommendations:

Table 31 - Policy Recommendations

Policy Recommendation	Justification	Details
Updates to the Town of Perth Official Plan	Transportation policies in the Town of Perth Official Plan are critical to supporting the development of a multi-modal transportation system. Opportunities to further update the transportation policies of the Town of Perth Official Plan (2014) should be investigated in the next Official Plan Five Year Review.	The updated plan should consider policy changes which are further detailed in **Section 8.1**
Active Transportation	The Town has a vision of fostering a multi-modal transportation network. Currently there is no Transportation Demand Management guidelines for new developments, and there is no strategic framework for developing future pedestrian facilities.	Develop TDM guidelines for new and existing development as a resource. Develop a Sidewalk Strategic Plan to consider future triggers and requirements for pedestrian facilities.
Community Safety Zones at: • Queen Elizabeth School • St. John's Elementary School	The designation of a Community Safety Zone is the responsibility of the municipality based on the guidance provided in OTM Book 5. This guidance, summarized above, does not include specific criteria or warrants to determine the appropriateness of designating a CSZ. In order to ensure that these zones are respected by motorists and applied where needed, it is recommended that the Town develop specific criteria to assess requests or concerns raised with respect to designating new CSZs. The existing traffic calming policy does not explicitly refer to school zones, but rather operational metrics to determine the needs for traffic calming measures. There were no concerns with speed limit safety at Queen Elizabeth School and St. Johns Elementary School, however, it is	Add school zones as part of a broader community safety zone initiative as it is appropriate to emphasize safety at such locations.

Policy Recommendation	Justification	Details
	recommended that the Town provide a unified policy regarding school zones which is an appropriate land use to designate as a special concern area for traffic calming measures. The additional signage and higher monetary penalties for traffic violations associated with CSZs would likely reduce speeds by some degree and thereby improve safety	
Entrance Permits	A small number of property owners have constructed accesses from private property to public property such as roads, paths, laneways, etc. without approval by the Town. Without review and approval by the Town, modifications that impact public property can negatively impact safety, traffic operations, maintenance requirements, and life-cycle costs.	New by-law to prevent roadway entrance being built onto municipal roadways without Town approval.
Overweight/Oversize Load Permit	Oversize/overweight truck loads are any load that exceeds the dimensions and weight limits set out in the Provincial *Highway Traffic Act*. They put physical strain on transportation infrastructure that could translate into expensive costs associated with the upkeep and maintenance of these facilities. While they do strain the infrastructure they travel on, the reality is that they are often a necessity for the movement of certain products and must be planned for appropriately. As such it is important that the Town of Perth develop a policy and route that can physically accommodate these vehicles to minimize the impacts on the community.	Permit system to track and approve overweight/oversize loads using municipal roadways

Policy Recommendation	Justification	Details
Parking Definition	The current maximum parking by-law length of time definition is 12-hours which was changed from 4-hours in 2007. Concerns from the Town and residents that the on-street parking is not being used appropriately, including cases where adequate off-street paid parking is available.	It is recommended to change the on-street parking to a 3-hour limit where an off-street parking facility is within 400 m of the on-street parking in question. This would allow the Town to manage parking limits based on a supply and needs basis as opposed to a general blanket policy that covers the entire municipality. Areas further than 400 m away from a publicly accessible off-street lot should be changed back to 4-hours to give a bit more flexibility to users. For areas in proximity to the Town Fair a parking by-law exception can be imposed during the dates that the fair is typically held on.
Recreational Vehicles	Recreational vehicles such as all-terrain vehicles (ATV) and motorized snow vehicles (snowmobiles) have passage through other communities in Lanark County, but not through the Town of Perth. The Town has advised that snowmobiles occasionally use the Tow Path during the winter to access lodging to go beyond Perth.	Due to the urban nature of Perth's built-form It is recommended that ATVs and snowmobiles continue to be prohibited from Town roads, however the snowmobile trail north of Highway 7 should be maintained even with future development.

9.0 IMPLEMENTATION AND MONITORING

9.1 CAPITAL PROGRAMMING

The capital cost of the recommended transportation strategy over the next 25 years, inclusive of new road & bridge construction, intersection improvements, sidewalk extensions, pedestrian routes, multi-use, and off-road trails, pedestrian crosswalks, on- road cycling lanes and truck route compliance measures will total approximately $49,846,000.

Of the $49,846,000, $99,400 is needed for short-term improvements (<5 years), $9,000,700 for medium term (5-10 years), and $40,745,900 for long-term (>10 years).

Certain transportation improvements will benefit current residents and would comprise the *non-growth* component of the Development Charges (non-DC). The improvements required to accommodate higher volumes of traffic and increased demand on the existing infrastructure directly attributable to new developments are eligible for funding through Development Charges (DC).

Based on our analysis, approximately 30% of the medium-term improvements, mostly active transportation improvements related to lands north of Highway 7, are development chargeable, as well as the New Arterial Road portion of the long-term improvements. This amounts to approximately 54% of the capital improvement costs that will be eligible for cost recovery through the DC mechanisms. The remaining 46% of expenditures could be financed from the residential tax base. A summary of the costs by timing and by DC or non-DC chargeable is provided below in **Table 32**.

Table 32 - Cost of Recommended Strategy by Timing and Development Charges

Timing	Total Cost[1] (DC + Non-DC)	Development Chargeable (DC)	Non-Development Chargeable (Non-DC)
Short-term (<5 years)	$ 99,400	$ 0	$ 99,400
Medium-term (5-10 years)	$ 9,000,700	$ 2,700,200	$ 6,300,500
Long-term (>10 years)	$ 40,745,900	$ 24,019,830	$ 16,726,070
Total	$ 49,846,000	$ 26,720,040	$ 23,125,960

[1] – All figures in 2016$, rounded to the nearest hundred, and do not account for inflation. Preliminary estimate only unless otherwise noted – subject to further review at preliminary/detailed design stage.

The overall cost for safety improvements including improved intersection signage, pedestrian crosswalks, landscaping treatments, speed limit reductions, and speed limit radar boards is $83,000. Truck Route compliance improvements in the form of improved signage and wayfinding will cost $13,800. Improvements for downtown off-street parking usage in the form of signage and wayfinding will cost $2,800. Multi-modal improvements such as bike lanes, pedestrian priority route improvements and multi-use trails is $9,000,700. Longer-term future needs construction including the replacement of the Craig street bridge and the construction of the NAR will cost $40,745,900. The summary of the investments in the Town's transportation network by grouping is provided in **Table 33**.

Table 33 - Cost of Recommended improvements by grouping

Grouping	Total Cost[1]	
Safety		
Elevated Accident Intersections	$	7,300
Isabella/Garden Ave	$	900
Pedestrian Crosswalks	$	25,400
One-way Street Evaluation	$	2,300
Community Safety Zones	$	1,200
Speed Limits	$	45,900
Truck Routing		
Compliance Signage	$	13,800
Parking		
Downtown Off-Street Parking Signage/Wayfinding	$	2,800
Multi-Modal Routes		
Cycling Routes	$	5,456,600
Pedestrian Priority Routes	$	3,224,400
Multi-Use Trails	$	319,700
Future Needs		
Craig St Bridge Replacement	$	16,726,100
New Arterial Road	$	24,019,800

[1] – All figures in 2016$, rounded to the nearest hundred, and do not account for inflation. Preliminary estimate only unless otherwise noted – subject to further review at preliminary/detailed design stage.

Below in **Table 34** is a breakdown of each recommendation and their associated unit and labour costs and timeframe.

Table 34 - Capital Funding Costs and Timeframes

Timeframe	Recommended Alternative	Component	Description	Unit	Unit Cost ($)[1]	Length/ Quantity	Subtotal ($)[1, 4]
Short-term	Elevated Accident Intersections	Drummond and Craig Intersection	Pedestrian Crosswalk ladder-style pavement markings	m	$ 18	29	$ 600
			Add centreline markings at least 50m upstream of each approach	m	$ 7	85	$ 600
			Increased stop bar width from 300mm to 600mm	each	$ 50	2	$ 100
			Install larger STOP signs	sign	$ 190	2	$ 400
		Gore and North Intersection	Pedestrian Crosswalk ladder-style pavement markings	m	$ 18	55	$ 1,000
			Add centreline markings at least 50m upstream of each approach	m	$ 7	79	$ 600
			Increased stop bar width from 300mm to 600mm	each	$ 50	3	$ 200
		North and Wilson Intersection	Pedestrian Crosswalk ladder-style pavement markings	m	$ 18	36	$ 700
			Add centreline markings at least 50m upstream of each approach	m	$ 7	28	$ 200
			Increased stop bar width from 300mm to 600mm	each	$ 50	3	$ 200
			Install larger STOP signs	sign	$ 190	2	$ 400
Short-term	Pedestrian Crosswalks	Gore and Herriot Intersection	Enhanced Pedestrian Crosswalk with pavement marking, signals and signage	each	$ 5,000	1	$ 5,000
		Gore and Market Square	Enhanced Pedestrian Crosswalk with pavement marking, signals and signage	each	$ 5,000	1	$ 5,000
		Additional Crosswalks Study	Crosswalk study for three additional intersections including: -Drummond Street/Mary Street -Drummond Street/Daines Place/Haggart Street; and -Wilson Street/Boulton Street	each	$ 7,500	1	$ 7,500
Short-term	One-way Street Evaluation	Wilson/Herriot between Foster and Gore	Addition of "Sharp Curve" warning sign with a "30 km/h" advisory speed tab	sign	$ 190	2	$ 400
		Wilson/Herriot between Foster and Gore	Pedestrian Crosswalk pavement markings	m	$ 18	10	$ 200
		Wilson/Herriot between Foster and Gore	Landscaping	shrub	$ 380	1	$ 400
		Wilson/Herriot between Foster and Gore	Addition of "No Parking" signs to prevent parking within 20m of the crosswalk	sign	$ 190	1	$ 200
		Wilson/Herriot between Foster and Gore	Double permanent centreline marking	m	$ 7	50	$ 400
Short-term	Community Safety Zones	Community Safety Zones at Queen Elizabeth High School and St. Johns Elementary School	Addition of Community Safety Zone Signs and warnings	sign	$ 190	4	$ 800
Short-term	Speed Limits	Craig/CR 43 between Provost and Irwin	Larger speed limit signs	sign	$ 190	2	$ 400
		Craig/CR 43 between Provost and Irwin	Permanent variable-message radar board	sign	$ 10,000	1	$ 10,000
		Sunset Boulevard between Mather and George Avenue	Larger speed limit signs	sign	$ 190	2	$ 400

Timeframe	Recommended Alternative	Component	Description	Unit	Unit Cost ($)[1]	Length/ Quantity	Subtotal ($)[1, 4]
		Sunset Boulevard between Mather and George Avenue	Permanent variable-message radar board	sign	$ 10,000	1	$ 10,000
		Rogers Road between South/CR 10 and Cockburn/Smith	Larger speed limit signs	sign	$ 190	2	$ 400
		Rogers Road between South/CR 10 and Cockburn/Smith	Permanent variable-message radar board	sign	$ 10,000	1	$ 10,000
		Joy Avenue between Glascott and Leslie	Larger speed limit signs	sign	$ 190	2	$ 400
Short-term	On-Street Parking	Isabella St/Garden Ave Curve	Addition of No Parking signs at the curve	sign	$ 190	3	$ 600
Short-term	Parking Definition	Downtown Parking supply and usage	Add signage and wayfinding to improve usability of off-street parking facilities	sign	$ 190	10	$ 1,900
Short-term	Truck Routing	Truck Route Compliance	Addition of Truck Route Signage	sign	$ 190	50	$ 9,500
						Short-term Subtotal:	**$ 68,500**
						Engineering (15%):	**$ 10,300**
						Contingency (30%):	**$ 20,600**
						Short-term Total:	**$ 99,400**
Medium-term	Multi-modal routes	Cycling Lanes	Construction of bike lanes and signage onto: -Dufferin St -Future E-W road north of Hwy 7 -Wilson St -Hwy 7 -Harris St -North St -Foster St -Gore St -Craig St -South St -Conlon Dr -Rogers Rd	m^2	$ 70.00	53,759	$ 3,763,200

Timeframe	Recommended Alternative	Component	Description	Unit	Unit Cost ($)[1]	Length/ Quantity	Subtotal ($)[1, 4]
		Pedestrian Pathways	Construction of sidewalks onto: -New collector road parallel to Dufferin St (Hwy 7) -Hwy 7 -Wilson St -Harris St -Drummond St -Victoria St -Foster St -Gore St -Beckwith St -Craig St -Rogers Rd -Market Square -Halton St -Conlon Dr -Cockburn St -South St -Arthur St	m^2	$ 80.00	27,796	$ 2,223,700
		Multi-Use trails	Construction of trails: -along the railpath -in the west end along the river	m^2	$ 70.00	3,149	$ 220,500
						Medium-term Subtotal:	**$ 6,207,400**
						Engineering (15%):	**$ 931,100**
						Contingency (30%):	**$ 1,862,200**
						Medium-term Total:	**$ 9,000,700**
Long-term	Future Needs	Regional Connections/Craig Street Bridge	Dismantling existing Craig St Bridge[2]	m^2	$ 3,500	806	$ 2,821,000
		Regional Connections/Craig Street Bridge	Constructing new South St Bridge[2]	m^2	$ 3,500	1,100	$ 3,850,000
		Regional Connections/Craig Street Bridge	Construction of connection road east and west of the new bridge[2]	m^2	$ 200	24,321	$ 4,864,200
Long-term	Arterial Road	New Arterial Road between Highway 7 and CR 43	Grade separated bridge over railway[3]	m^2	$ 3,000	2,914	$ 8,742,000
		New Arterial Road between Highway 7 and CR 43	Construction of new two-lane roadway with Bike Lanes and one grade-separated railway crossing[3]	m^2	$ 200	39,117	$ 7,823,400
						Long-term Subtotal:	**$28,100,600**
						Engineering (15%):	**$ 4,215,100**
						Contingency (30%):	**$ 8,430,200**
						Long-term Total:	**$40,745,900**
						Total (Including Engineering & Contingency) :	**$49,846,000**

[1] – All figures in 2016$ and do not account for inflation. Preliminary estimate only unless otherwise noted – subject to further review at preliminary/detailed design stage.
[2] – Estimate, more accurate cost to be determined after an EA and study of options
[3] – Estimate, addition of bike lanes was not assessed in the 2008 EA. Detailed design and EA required for complete costs of a bike lane component.
[4] – Rounded to the nearest hundred.

9.1.1 Funding Options for Active Transportation Improvements

To assist in reducing taxpayer costs on active transportation improvements, the Town should adopt policies and design standards to ensure developers are guided, provide the components desired for the transportation network and ensure that network upgrades required as a result of growth are accounted for in future Development Charge reviews. The town should pursue outside funding opportunities such as:

- Federal / Provincial Gas Tax (as identified above);
- Transport Canada's MOST (Moving on Sustainable Transportation) and ecoMobility (TDM) grant programs;
- Federation of Canadian Municipalities Green Municipal Fund;
- Federal / Provincial infrastructure stimulus funding;
- Ontario Ministry of Health and Long Term Care grant programs;
- Ontario Ministry of Environment Community Go Green Fund (CGGF);
- Ontario Ministry of Transportation Demand Management (TDM) Municipal Grant program;
- Partnership funding with Lanark County for infrastructure and health promotion related initiatives;
- The Communities in Action Fund available through the Ontario Ministry of Health and Long Term Care for programming and promotional initiatives related to health/active living/active transportation;
- The Canada-Ontario Infrastructure Program;
- Ontario Trillium Foundation that was recently expanded in response to the money collected throughout the Province by casinos;
- Human Resources Development Canada program that enables personnel positions to be made available to various groups and organizations. For example, the Ontario Trails Council has been able to hire two people under this program;
- Corporate Environmental Funds such as Shell and Mountain Equipment Co-op that tend to fund small, labour-intensive projects where materials or logistical support is required;
- Corporate donations which may consist of money or services in-kind, and have been contributed by a number of large and small corporations over the years;
- Potential future funding that might emerge from the Province in rolling out the Ontario Trails Strategy;
- Service clubs such as the Lions, Rotary and Optimists have assisted with a number of high visibility projects at the community level;
- Private citizen donations / bequests, that can also include a tax receipt for the donor where appropriate.

10.0 CONCLUSION AND RECOMMENDATION

The Perth's Vision Statement reads "To be a sustainable Community that respects both its Heritage and Natural Environment while enabling a balanced lifestyle by means of a vibrant economy." This TMP provides policies, strategies, and recommendations to help the Town improve the safety of motor vehicle circulation and increase the use of active transportation modes while accommodating projected demands on the transportation system due to population, business, and institutional growth to the year 2041.

The recommendations presented in this TMP have been developed together with the community, government agencies, and Town staff to provide the basis for a more flexible transportation network that embraces the concept of Complete Streets which are streets designed, built, and maintained to accommodate the needs of all users including people of all ages and abilities who walk, ride, cycle, and drive.

10.1 SHORT TERM RECOMMENDATIONS

The short-term improvements we recommend revolve around safety, truck routing, and downtown parking; summarized in **Table 35**. These include safety improvements to be added at several intersections, speed safety improvements, pedestrian crosswalk enhancements, new community safety zones, entrance permit by-laws, truck route compliance and oversized load measures, and downtown off-street parking improvements.

Table 35 - Recommended Short-Term Improvements

Timing	Group	Description
Short-term	Safety	Replacement of courtesy crosswalks with enhanced crosswalks and further study of additional three crosswalk locations.
Short-term	Safety	Implementation of safety features at: • Drummond St at Craig St • Gore St at North St • North St at Wilson St • Wilson/Herriott St curve • Isabella/Garden St curve
Short-term	Safety	Addition of safety features to address speeding at: • Craig/CR 43 between Provost and Irwin • Sunset Blvd between Mather and George • Rogers Rd between South/CR 10 and Cockburn/Smith • Joy Ave between Glascott and Leslie
Short-term	Safety	Implementation of Community Safety Zones at: • Queen Elizabeth School

Timing	Group	Description
		• St. Johns Elementary School
Short-term	Safety	Entrance Permits • New by-law to prevent roadway entrance being built onto municipal roadways without Town approval
Short-term	Truck Routing	Truck route compliance signage & wayfinding
Short-term	Truck Routing	Overweight/Oversize Load policy: • Permit system to track and approve overweight/oversize loads using municipal roadways
Short-term	Parking	Signage & wayfinding to improve off-street parking utilization in the downtown BIA

10.2 MEDIUM TO LONG TERM RECOMMENDATIONS

The medium-to-long-term improvements we recommend revolve around multi-modal transportation and future needs; summarized in **Table 36**. These include bike lanes on various roadways, new multi-use trails, pedestrian priority routes, the potential Craig St bridge replacement with a new South St bridge, and a new arterial roadway in the east end of town between Highway 7 and County Road 43.

Table 36 - Recommended Medium-to-Long-term Improvements

Timing	Group	Description
Medium-term	Multi-Modal Routes	Bike Lanes on various roadways
Medium-term	Multi-Modal Routes	Multi-Use trails along the rail path between Garden Ave and Wilson St, and between the County Administration Complex site along the Tay River until Rogers Rd
Medium-term	Multi-Modal Routes	Pedestrian priority routes including sidewalks on various corridors
Long-term	Future Needs	Replacement of Craig St bridge potentially with a new South St bridge
Long-term	Future Needs	Construction of a new Arterial Road between Highway 7 and CR 43 in the east end of Town

11.0 REFERENCES

Ministry of Municipal Affairs and Housing. (2014). *Provincial Policy Statement 2014*. Toronto, ON: Queen's Printer for Ontario.

Ministry of Transportation Ontario. (2015). *Southern Highways Program 2015-2019*. Toronto, ON.

Ministry of Health Promotion. (2005). *Ontario Trails Strategy*. Toronto, ON: Queen's Printer for Ontario.

McIntosh Perry Consulting Engineers Ltd. (2012). *Lanark County Sustainable Communities Official Plan*.

The Rethink Group. *Lanark County Vision 2025*.

AECOM. (2010). *County of Lanark Transportation Master Plan*. Ottawa, ON.

AECOM Canada Ltd. (2009). *Lanark County Traffic Calming and Speed Management Policy*. Ottawa, ON.

AECOM Canada Ltd. (2009). *Lanark County Cycling Study*. Ottawa, ON.

Town of Perth Planning Department, & Tunnock Consulting Ltd. (2014) *Town of Perth Official Plan*. Perth, ON.

Town of Perth. (2015). *Strategic Plan 2022 Update*. Perth, ON.

Cumming Cockburn Limited. (1991). *Town of Perth Transportation Study Report*.

Carl Bray & Associates Ltd., The Planning Partnership., Stantec Consulting Ltd., & Tunnock Consulting Ltd. (2006) *Town of Perth Secondary Plan Final Report*.

Commonwealth Historic Resource Management Limited. (2005) *Tay River Trail Conceptual Master Plan*. Perth, ON.

Town of Perth., & TSH. (2007). *Perth Arterial Roadway Municipal Class EA Study*. Perth, ON.

Town of Perth. *Heritage Perth Economic Development Strategic Plan 2013 to 2018*. Perth, ON.

Town of Perth., & MMM Group. (2011). *Downtown Perth Community Improvement Plan*. Perth, ON.

Town of Perth. (2015). *Dufferin Street Sidewalk Placement Report*. Perth, ON.

Town of Perth. (2013). *The Corporation of the Town of Perth Multi-Year Accessibility Plan 2013-2014*. Perth, ON.

County of Lanark Public Works Department. *Application for Oversize/Overweight Load*. Lanark County, ON.

Town of Perth. (2014). *Town of Perth Agenda: 5:15 pm, Tuesday, November 4, 2014*. Perth, ON.